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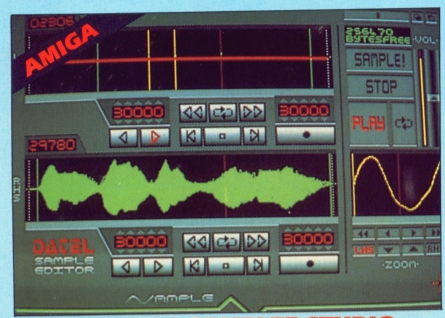
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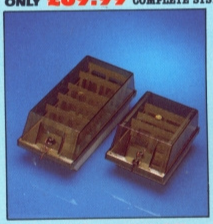
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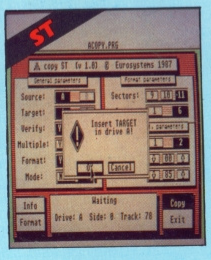
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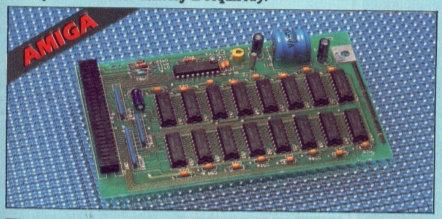


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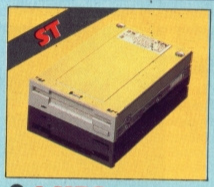


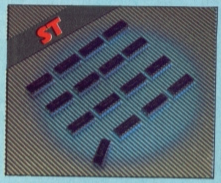
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ST AMIGA FORMAT

The complete package for Atari ST and Commodore Amiga owners

NEWS 7
The amazing Amiga Fax machine, bad news for software pirates, and all the month's news.



68000 AT LARGE 13
It isn't only the heart of the ST and Amiga – the 68000 family controls a stagerring array of futuristic machines.

THE WORLD OF COMMS 17
Are bulletin boards only for spotty technofreaks? Discover what you can *really* do with a modem.

AMIGA ANIMATORS 22
The world's finest gathered in Edinburgh to push the Amiga to its limits. We were there too.

PUBLIC DOMAIN 29
The newest PD software from ST and Amiga user groups reviewed.

SPECIAL OFFERS 94
'Ello, Tosh, gotta new program? Well why not? They're all here in the Format bargain basement.

GOLD DUST 99
Steve Gold reaches for the rumours and brings you the hottest news from the shady U S of A.

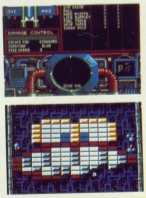
LETTERS 101
"Dear Ed, my computer doesn't understand me. Signed, Worried of Worksop." Don't worry, Worried, all your problems are answered here.

ESCAPE SEQUENCE 106
Is it the end of the issue already? Then it must be time for Superheroes to come to the rescue.

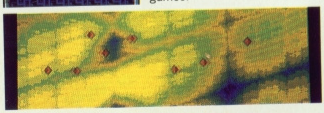
GAMES



SCREEN PLAY 51
The competition's never been stiffer: this month's coveted Format Gold awards go to *Starglider 2* – of course – and the wordy but excellent *Federation of Free Traders*.

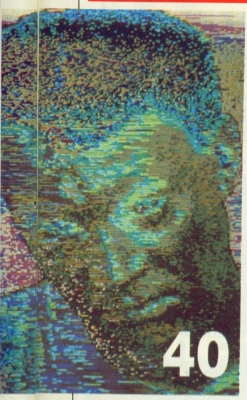


GAME BUSTERS 59
A collection of cunning circumventions to get you around *Captain Blood*, *Arkanoid* and all the biggest games.



73 DISK EXTRA
It's the programs ST Amiga Format reject that makes Disk Extra the best! Check out *Pipe Panic* and *Missile Command*, together with more superb utilities and goodies for both ST and Amiga.

GRAPHICS





VIDEO DIGITISERS

40

Reviews of three brand new picture purloiners – *DigiView 3* and *DigiPic* for the Amiga, and *Turbo Dizer* for the ST, plus a look at image processing techniques to help you get more from your digitiser.

REVIEWS

STOS

25

Can you really write your own ST games to rival the professionals? We test the STOS system out.

TRUE BASIC

31

BASIC strikes back at its critics – could this 'official' new version be better than Pascal?

K-MINSTREL 2

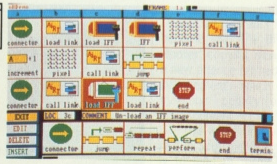
34

Kuma's improved entry-level ST music system could be a boon to budding Beethovens.

DATA MANAGER PROFESSIONAL

48

A powerful relational database at a relatively low price. Does it deliver the goods?



85

Throw away your C compilers – AiRT promises to make programming the Amiga simply a matter of clicking icons.

3D GRAPHIC WONDERS!

Over the few months since the launch of ST Amiga Format one of the most noticeable changes in the software that has flowed through the office is the improvement in the quality of game graphics. At the start of the year a lot of the games material was based around conversions from successful programs in the eight bit world. Too often the graphics were direct copies of the sprites and backgrounds used in the earlier versions. This automatically meant that the full potential of the ST and Amiga was rarely realised.

Recent releases have tended more and more to live action, digitised scenery and solid 3D graphics, all of which are ideally suited to the increased processing power and higher graphics resolutions of the 16 bit machines. No longer are games limited to a few bland and miniscule sprites or wireframe boxes and eight colours on screen at once. Current games like *Carrier Command*, *Starglider 2* and *Federation of Free Traders* show just what can be achieved and approach true flight simulator quality in both frame rate and scenery mapping. *Whirligig* shows something of the future in its use of 'Lightsource 3D'. The graphics routines used in these programs are far ahead of the cutting edge of even a few months ago.

The best part of all this is that we're still a long way from the best these machines can achieve. Remember when *Elite* first showed on the BBC Micro? It took programs on that machine into a new realm. Six months earlier, no-one would have believed it possible on an eight bitter. On current showing, who'd like to guess at what will be making its appearance on the ST and Amiga in six month's time?

MUSIC

INITIAL MIDI

37

What exactly do you have to do to connect your ST or Amiga up to a synthesizer, and what happens next? Begin our idiots guide here.



TECHNOPHILE

TOOLING UP

70

A pair of quick utilities to boost your Amiga disk space, and an ST mono/colour screen emulator.

LEARN BASIC

82

Part 3 wends its way through WHILEs and WENDs, complete with your own type-in game.

DESKTOP

88

Strictly for ST users – 100% top secret hints, tips, and wrinkles you can't resist stealing.

WORKBENCH

91

Become Surgeon General of the Amiga's internal organs with these vital tips for users of all skills.

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Power BASIC and HiSoft BASIC have grown to be the standard BASIC implementations for the Atari ST and now HiSoft has a very special offer for existing GFA BASIC 2 users

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See the great reviews in PCW June 88, Atari ST User June 88, ST Amiga Format July 88

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NEWS

Low-cost Laser launch

Thinking of diving into DTP, but worried at the cost? Crown Computer Products hope to help you make up your mind by offering the Centronics *Pageprinter 8* laser printer at a new low price of £920, including VAT. This eight page per minute laser features Epson FX, Diablo and IBM Proprinter emulations, and half a megabyte of memory as standard. For proper DTP use (as opposed to just high-quality text file printing) a further £57.50 buys you another 1 Mb and HP Laserjet Plus emulation, giving you a fully functional DTP printer for only just over £900.

The Pageprinter comes with a year's warranty, and on-site maintenance is available from Logitech for a further £172.50 per annum.

■ *Crown Computers, 210 Moss Lane, Burscough, Lancs L40 4AZ (0704 895815).*



■ Centronics – a name to conjure with on the side of the latest low-cost laser from Crown

FAST scuppers Scottish pirates

FAST, the Federation Against Software Theft, working in collaboration with software houses Electronic Arts, Elite, Ocean, Microprose, US Gold and the boys in blue from Glasgow's 'E' Division, have conducted their biggest raid yet against alleged software pirates. In a set of simultaneous raids at the beginning of August, 3154 disks were seized from a number of sites. The disks contained over 6000 programs, covering business and utility software as well as a large number of games, and the haul has an estimated street value of over £200,000.

It is alleged the piracy gang had for some while been selling low-priced duplications of well-known games and business software from a stall at a local Glasgow market. It was only in March of this year, however, that they expanded their operation to offer a postal copying service to customers. It is understood that they were advertising in a number of computer magazines and national dailies. The 'company' changed its name several times in the last six months.

During the operation, Simon Jeffrey of Electronic Arts spent some time in Glasgow helping to co-ordinate efforts and was "shocked at the extent of piracy" which had been unearthed. He's now convinced that a major factor in the current wave of piracy is the 'cracking crews' operating from within user groups. By removing protection from programs and photocopying manuals 'on loan' from groups, these crews can duplicate even EA's top branded software, normally protected by its complexity and the need for a manual.

Later this year the *Copyright Design and Patents* Bill is due to become law. The Bill will outlaw 'spoiler' copying devices, through a new offense termed 'Trade Mark Infringement', which will carry a maximum penalty of 10 years imprisonment.

This is the first big anti-piracy raid in Scotland, but it seems likely to lead to follow-up action in other parts of the UK. Bob Hay of FAST confirmed that police reports had been handed to the Procurator Fiscal with a view to prosecution.



Only 2743 more discs to try....

■ *Format adds: With all this tightening of the law against copying of software, some thought must still be given to the user of that software who has a legitimate need to copy a program to guard against disk corruption or canine ingestion. It's not really enough for software houses to offer a return of post replacement service for damaged disks (and we know of none as yet who advertise such a service). How about providing a properly labelled second copy of business and leisure software to legitimise backups? By all means number them and mark them 'Backup' to discourage passing on. This would at least give the end user, who is the one to have put hand in pocket in the first place, adequate protection against the untoward. Any comments on this idea to our letters page please.*



GAMES GIANTS SPURN PC SHOW

This year's PC Show (formerly the PCW show) is scheduled to be the biggest and glitziest ever, yet many of the big names in games and leisure software have chosen to do their own things. Some have pulled out completely and have their own mini-shows in outlying hotels or halls, others have small 'point of collection' stands from where VIPs from the trade (that means we journalists, of course) can be whisked off to special presentations at alternative venues.

As the leading show in the computer calendar reaches its eleventh year, and moves into its fifth venue, each larger than the last, the exeunt of names like Mediagenic (née Activision), Electronic Arts and Gremlin Graphics, represents quite a hole in the shows all-embracing façade. As the stands get bigger and more expensive, software companies have to look more and more carefully at the effectiveness of spending on large stands. Ian Stewart, MD of Gremlin, put over £65,000 into their stand last year and feels that the "glamour of the show has outgrown the industry". The company is putting on its own presentation at Stringfellow's nightclub the night before, which Stewart believes will make more of an impact on the people that count. (Don't bother to go if you haven't got a ticket!)

Software houses are thinking more and more about where to put their money. Many now concentrate on magazine advertising (*Hooray! – Ad Dept*) or Point of Sale promotions through dealers. As Lesley Mansford of Electronic Arts puts it, "The people we need to see are a relatively small band of trade and press figures, who are often most effectively informed through a separate presentation". This idea is reiterated by Larry Sparks of Mediagenic who outlines their three-pronged marketing strategy: to be more cost effective, to generate a higher profile and to tailor marketing to specific groups. Mediagenic are concentrating on trade and press at the show with a separate presentation and chauffeur shuttle to and from the show. They have a TV promotion scheduled for November to keep their products in the customer's eye.

The outcome of this policy of targetting specific areas of the industry is great for hard-working dealers and journalists, but is likely to mean fewer and fewer mega-stands at the main computer shows, and less direct contact with the people who actually pay for the products – you lot.

■ *The Personal Computer Show runs from 14th to 18th September at Earls Court. Admission is £3 on the door. Why not drop by the Future Publishing booth and meet some of the ST Amiga Format staff? We're on stand ???.*

Barbaric use for new software

The best advertisement for a new piece of programming software is to have someone write something really good using it. If that someone happens to be the same company that wrote the programming software, and that something is *Barbarian II*, the follow-up to the best selling slice 'em up game, it all proves very convenient.

The software in question is Outlaw Productions' *Shoot-Em-Up Construction Kit* game writing package, and Outlaw's Barbarian II is currently being programmed using it. SEUCK is available on both ST and Amiga and offers full gameplay design as well as editors for graphics and sound. If you too would like to try your hand at writing games, cross your local dealer's palm with £24.99 and walk away with Outlaw's latest.

■ *Outlaw Productions, The Old Forge, 7 Caledonian Road, London N1 9DX (01-278 0751)*



■ ***A Barbarian designing Jo Walker II, or was it Jo Walker...?***

Atari launches Micro Micro

Keeping their high profile of product announcements in recent months, Atari have announced a tie up with Cambridge-based *DIP Computers*, whose pocket PC they will market worldwide. While this might not appear directly relevant to ST or Amiga owners, there's actually a lot to be said for Walkman-sized micro with an 8x40 LCD screen, 512K of RAM, 256K of application software in ROM and credit card sized 'smart cards' for storage. The key feature of the new machine, which should be available soon after Christmas for under £200, is that the installed software includes a communications pack, and presumably some kind of socketry to connect it to the outside world. This opens the opportunity of recording data on the pocket portable and transferring it later to your home micro back at base.

The pocket micro also sports a word processor, Lotus 1-2-3 compatible spreadsheet, address book and various other bits and pieces. It could be very handy in its own right, assuming you can get you fingers on the miniscule keyboard. Just the thing for showing off to fellow train passengers.



■ ***Laptop ST or pocket PC? Which will hit the market first***

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SNIPPETS

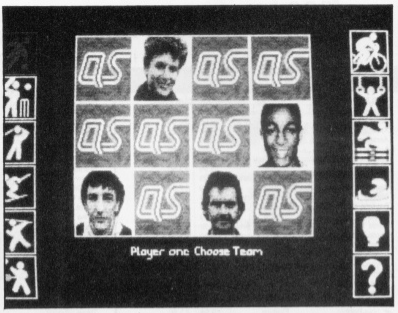
■ **Elite** software have acquired the licence to BBC TV's **A Question of Sport**, and claim to be producing a game with all the features of the long-running series. Will it, like football, be 'a game of two halves', will the green background screen make you 'as sick as a parrot' and will Elite reproduce the world's most monotonous intro tune? Only time will tell. Meanwhile, here's what it will look like.

■ The latest **JumpDisk** from **George Thompson Services** includes a handy little utility for anyone worried about virus attacks. DISKX 2.2 will save all the bootblocks from your Amiga disks to a separate 'safekeeping' disk, from where you can reinstall them should the worst happen.

This procedure will recover most infected disks, though there are rumours of a 'real beast' virus which writes random read/write errors all over the disk surface, rather than restricting itself to the boot block. The jump disk also includes a copy of VIRUSX 1.5 to help trap them before they can strike. It costs £8.50 from GTS, Dippen Lodge, Dippen Brodick, Arran KA27 8RN, Scotland.

■ Those in the market for BIG hard drives will no doubt be delighted to hear that **Frontier Software** have introduced a new **120Mb SupraDrive** into their copious range, to slot in neatly between the 60Mb and 195Mb units. Price for this speedy little data-eater is a mere £1905. Phone Frontier on 0423 67140.

■ **Trilogic** have two audio goodies just out for the Amiga. The **Miniamp 1**, at £14.99, is a small audio amplifier which plugs into the stereo output of the Amiga and draws its power from the serial port. It outputs to a pair of Walkman-style headphones which you supply (or pay Trilogic a further £4.99 for). The **Miniamp 2**, which costs £19.99, is a pair of small speakers, again drawing power and audio from the micro, but playing it in full stereo to the outside world. Telephone 0274 691115 for further details of either.



■ *A Question of Sport screen.*

■ **New Catalogues: Silica Shop**, the main UK Atari Distributor, has just released its new catalogue describing literally hundreds of ST-related products. These range from machines, drives and laser printers to games, business and specialist software. Copies are free and gratis, given a phone call to Silica on 01-309 1111.

Specialist musical software is what **Audio Software** is all about. Their first catalogue lists hundreds of products for a wide variety of micros, though the ST and Amiga take the lion's share. Each item is given a brief descriptive paragraph, most have screen dumps and all, surprise, surprise, have prices. Audio Software is a new venture worthy of micro musician's support. Ask for their catalogue on 01-722 4655.

Low-cost Amiga short-wave link

The Amiga's high-res graphics are being put to more and more varied uses these days, and ICS Electronics of Arundel in Sussex has come up with a novel way of grabbing piccies straight from the ether.

The package is aimed at ham-radio buffs or anyone else with access to a short-wave radio receiver. By connecting this into ICS's analogue to digital converter and hence to the Amiga you can capture fax-type transmissions used by radio amateurs and by press agencies worldwide. A typical high-resolution black and white picture will take around 10 minutes to receive, and the software can convert them to IFF format for further processing or printing. If you have the equipment and the licence you can also transmit pictures using the same software and hardware package.

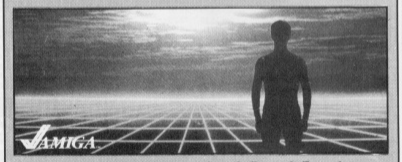
The confusingly named Amiga-Fax (it doesn't connect to the standard Fax network) costs £99.95 from ICS, who intend to expand your potential still further by releasing a satellite receiver for yet more piccies by Christmas.

■ *ICS Electronics, PO Box 2, Arundel, West Sussex BN18 0NX (0243 65655)*



■ *The jewel in the crown of your Amiga, captured from the airwaves by ICS's Amiga-Fax*

A new Acquisition



■ *It looks like you can even store nude male figures in Taurus's new database.*

Version 1.3 of Taurus Software's *Acquisition* database has now hit the streets in a flurry of specifications which would knock the stuffing out of many a competent package. With a field size of 10 Mb and a file capacity of 1 Gb, Acquisition has to be one of the largest systems available for the Amiga.

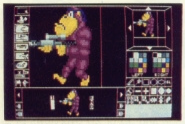
The database manager is fully relational, can handle several separate databases at once, stores text, graphics or sounds, and even has its own BASIC-like language. It comes complete with a text editor, applications generator and password protection system, with a 200 page tutorial guide as an optional extra. Acquisition requires an Amiga with two floppy drives or a hard drive and a floppy, but at least it only needs 512K of memory. The big shocker, unfortunately, is the price; £245. While big businesses may regard this as a snip, the rest of us will have to wait in hope for the best features to filter through to lower price packages.

■ *Taurus Software, Taurus House, 3 Bridge Street, Guildford, Surrey GU1 4RY (0483 579399).*

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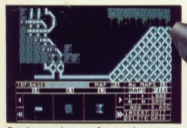
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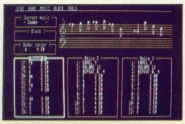


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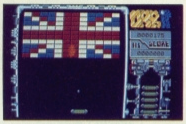


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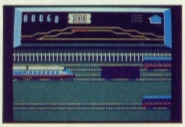
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FUTURE PERFECT?

Andy Storer anticipates an autumn avalanche of action with previews of the hottest upcoming games.



■ *B.A.T.*

B.A.T

UBISOFT ■ ST & Amiga ■ £24.95

A graphic adventure set in the 21st century where you find yourself working for the Bureau des Affaires Temporelles, a secret organisation responsible for enforcing justice and tracking down subversives. What's more you've undergone a few modifications – like you have a computer in your forearm working on blood-power. Your mission takes you off-world to the new multiplanetary combines, all depicted in really brilliant graphics.

ZORK ZERO

INFOCOM ■ ST & Amiga ■ £24.95

In the beginning there was *Zork*. Zork sold a million copies and became history's best selling entertainment software. So here comes the huge prequel to Zork, featuring Infocom's new adventure system. Who exactly is Lord Dimwit Flathead the Excessive? What's it really like to play Double Fanucci? How did the Great Underground Empire collapse? Where do Grues come from? When and where can I buy this? Soon. Everywhere that's anywhere.

FUSION

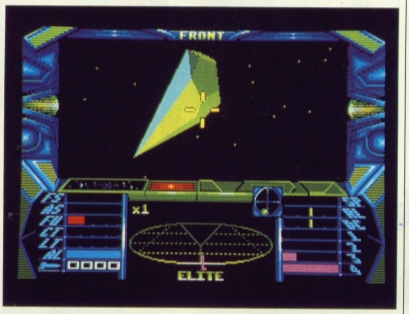
ELECTRONIC ARTS ■ Amiga ■ £24.95

An arcade/strategy mix developed in the UK and employing some very pretty animated graphics with 8-directional parallax scrolling, varied levels, and digitised sounds. And *Fusion* sounds great – the press release quite clearly states, 'The objective is total annihilation'. Dodge homing missiles, plasmo spheres, nitro mice and ergonomic erupters as you try to collect and redeploy the remnants of an ancient bomb and figure out what 'ergonomic erupters' actually do. Kill you in a user-friendly sort of way?

CHRONO-QUEST

PSYGNOSIS ■ ST & Amiga ■ £29.95

Billed as the first of a new generation of adventure games from Psygnosis, *Chrono-Quest* is a time-travelling who-dunnit which looks just great. Your father has been murdered and you're the prime suspect. But it's not one of those how-can-you-possibly-be-alive-if-you-travelled-back-in-time-and-killed-your-father dilemmas. (*This wins the*



■ *ELITE*

ELITE

FIREBIRD■ ST & Amiga ■ £ 24.95

Possibly the only game to have ever achieved true cult status makes its solid 3D appearance on our 16 bitters. Do you know anyone who hasn't played it? Featuring 5 missions, 2000 planetary systems and hordes of pirates, police and bounty hunters you even get to see the faces of the aliens in these versions. Looks as though there'll be enough enhancements and updates in there to make the wait more than worthwhile.

Format prize for the-longest-legitimate-hyphenated-phrase-or-sentence-in-a-news-article-in-the-magazine – Ed) You have to flip into the future to find the real murderer after first finding a machine to take you there. As there's always no time like the present you should have bought this tomorrow.

BATTLE CHESS

ELECTRONIC ARTS ■ Amiga ■ £24.95

Neat graphics, huh? *Battle Chess* puts a little arcade action into the greatest strategy game of all time and throws in some digitised sound too. In fact there's 400k of it in there along with 4 Meg of animation and 3D or 2D overviews of the 10 level action kicking off with an opening library of 30,000 moves.

MAFDET

SOFTWARE HORIZONS ■ ST & Amiga ■ £14.95

The first of three releases by a brand new company offering its wares at a refreshingly low price but hopefully delivering power too. *Mafdet* is set in Egyptian mythology and you, believe it or not, are Mafdet the cat goddess! Sexy eh? Transmuting left, right and centre you're on a search for the Book of the Dead. Somehow it sounds as though you could be wandering around the labyrinths of quite a few pyramids.



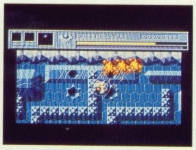
■ *SPITTING IMAGE*

SPITTING IMAGE

DOMARK ■ ST & Amiga ■ £ not announced

The series' scriptwriters have collaborated on this one so hopefully all the acid humour will lose none of its edge. Popestar, Khomeini, Gorbachev, Botha, Ronnie and, of course, The Thatch all want to take over the world. The madcap combat relies on you destroying their credibility – after all, character assassination must qualify as a shoot-em-up somewhere along the line.





■ *FUSION*





■ *BATTLE CHESS*

FUTURES

MOTOROLA COASTER

The 68000 heart of the ST and Amiga is only one of a range of super-chips in the 68K series from Motorola Richard Monteiro looks further up the range at the high speed mega processors that give a good insight into the mighty micros of the future.

If there's one catch phrase that epitomises ST and Amiga micros it has to be 16-bit, which is generally taken as an indicator of a computer's power. To an extent this is correct. The device that actually gives a machine its 8-bit, 16-bit or even 32-bit rating is the microprocessor. The heart of the machine. You're probably aware that the 68000 chip is used in several micros, ST and Amiga included. What you might not know is that the 68000 processor family drive devices as diverse as digital cellphones, equipment for positioning North Sea drilling platforms and electronic controllers in car engines.

Motorola, founded in 1928, introduced the 68000 to the world in 1979. While this £7 processor is commonly branded 16-bit, it is in fact '16/32-bit'. Partly 16-bit because it can only communicate with the outside using 16-bit paths (in the '70s chip packaging hadn't developed far enough to allow more than 16 pins along two sides of a chip) and partly 32-bit because its inner workings are 32-bits wide. The 68000 was the first microprocessor to boast a 32-bit internal structure.

The bit count actually tells you the largest number that can be handled by the chip in one operation. For instance, the 16-bit data path of the 68000 can operate on any number between 0 and the largest binary number that will fit in 16 bits – which happens to be 65535. However, the 68000 can cope with 32-bit numbers internally, or any number from 0 to 4,294,967,295 (4 Gigabytes). All these figures actually do is to give you a rough idea of processor power. Generally the larger the number that can be manipulated, the more powerful the processor (hence a 16-bit micro will usually be much faster than an 8-bit micro).

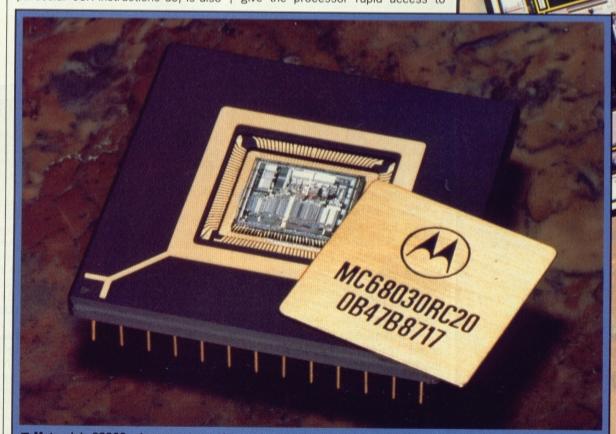
68000s have a 24-bit address line (even if Atari's technical support told us it's only 23-bit) which means they can access memory in the range 0 to 16,777,215 (16 Megabytes). Neither the Amiga nor ST micros exploit this to the full: Although the Amiga can address the full 16Mb, only 9.5Mb can be RAM. The rest is reserved for custom chips. The ST is allowed to access even less: 4 Mb maximum. This is a restriction of the memory management unit.

68000 Plus?

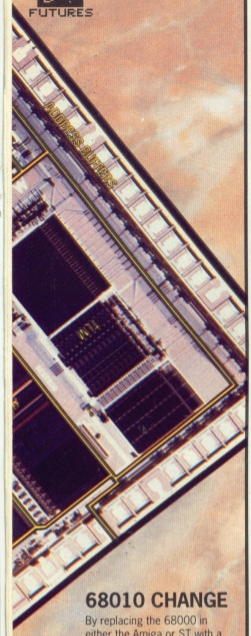
The 68008 was released shortly after the 68000. This really-useful-chip was the bane of the QL. Although it claims to be 16-bit, it only has an 8-bit data bus and 20-bit address bus (accessing 1Mb at most). After that came the 68010 and 68012 – almost identical to the 68000, but with additional instructions and registers. The microcode, which determines what particular 68K instructions do, is also more efficient in these chips; thus 010 and 012 processors are faster (see margin note on upgrading your computer's 68000).

In 1984 Motorola shipped the first full 32-bit processor, the 68020 (which will now cost you £120 for the lowest-speed, 12MHz chip). It's a full 32-bit chip because its data paths and processing elements are all 32-bits wide. Late last year the 68030 made its first appearance. Both 32-bit chips are compatible with earlier 68K processors, but typically offer twice the processing power.

Apart from the obvious advantage of a huge memory address range (4Gbytes), Motorola's 32-bit processors offer on-chip instruction caches (the 030 also has data caches) – small, on-chip memory arrays that give the processor rapid access to



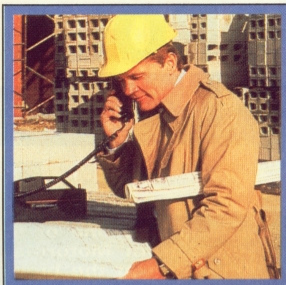
■ *Motorola's 68030 microprocessor; the most recent member of the 68K family. "Oh-Thirty" is often described as a mainframe on a chip. The processor boasts a clock rate of 25MHz, instruction and data caches, parallel processing facilities, Burst Fill (a method of speeding up information transmission from memory) and 68K series compatability. £300 if you want one!*



68010 CHANGE

By replacing the 68000 in either the Amiga or ST with a 68010, applications will run anywhere between 8% and 50% faster. The 68010 is pin compatible with the 68000 which means swapping the chips is simplicity itself. Software which uses MOVE SR,ea instructions will crash on the 68010, but it is possible to install a program to detect this and other assembler instructions that aren't compatible with the 68010. Price for the faster chip is around £16.

On the Amiga side of the cover disk there's a drawer called MC68010. In that drawer is a file called MC68010.DOC and in that file is full information on upgrading your Amiga processor from a 68000. There are also program patches for overcoming instruction incompatabilities. but, be warned, if you attempt this upgrade your computer's guarantee will be invalidated and you may also damage your machine. Don't attempt the upgrade unless you are confident of what you are doing. FUTURE PUBLISHING WILL NOT BE HELD RESPONSIBLE IF YOU SCREW THINGS UP.



■ *68000s aside, Motorola manufacture mobile communication systems – yes, those annoying portable Cellphones that always ring during tube journeys.*



■ *Apple's Macintosh machines have arguably done more for the 68K processor family than any other computer. The SE picture here uses a 68000 clocked at 8MHz. The newer Mac II uses Motorola's 32-bit 68020 and runs at 15.6672MHz.*



■ *Atari's Abaq screen on show. Their 68030 Unix engine will have the same graphics capabilities. The resolutions on offer are 1280 by 960 with 128 colours, 1024 by 768 with 256 colours, 640 by 480 with 65535 colours and 512 by 480 with 4 billion colours.*



■ *Huge amounts of data can be stored on CD. The drives that extract information from the discs require some very clever error-correction circuitry. And what better device to ensure the job is done properly than a 68K processor?*

frequently-used information – pipelining (something RISC enthusiasts will be familiar with) and very high clock speeds.

Processor control

According to Steve Heath, Motorola UK's applications engineer, there are well over 15 million 68K processors in existence, and only a fraction of those have been sold to large firms like Apple, Atari and Commodore. So where have all the other processors gone? What are they used for?

While computers and workstations – Apple Macs, Motorola Series 8000, Suns and Apollos, for instance – are responsible for using up the bulk of 68K processors, a large proportion can be found in photocopiers, CD-ROM drives, laser and other advanced printers, radio controlled equipment, digital audio devices, telephone exchanges, fault tolerant machinery and classified military projects. The list is seemingly endless.

32-bit 68020s and 68030s are used mainly for super workstations – the type of powerful desktop systems used to design integrated circuits, simulate new aircraft designs and explore the physics of sub-atomic particles. Business and office automation systems also benefit from these processors: from stand alone personal computers to peripheral equipment. The high speed processing offered by Motorola's 32-bit chips make them ideal for factory automation; intelligent robots, industrial control systems and the like. General Motors use 68020-based manufacturing control systems.

Telecommunications is another area that gains from the power

68000S IN THE ARCADE

Real processing power is needed to shift big sprites and large expanses of background scenery. You can forget Z80s and 6502s – they just haven't got the umph. Certainly not on their own, anyway. But put three such processors in parallel and you might just pull it off. Arcade machines like Tron use three Z80As to great effect.

The 68000 is definitely the vogue processor as far as arcade machines are concerned. About 15% of all machines use a 68000 as the main processor; some even use two. Sega – one of the most prolific Japanese arcade machine manufacturers – reckon that around 70% of their arcade consoles come with a 68000. Usage of the 68000 is on the increase – 68020 and 68030-based boards are likely later in the year. They haven't been used to date because expensive custom chips have been tuned to work in a 16-bit environment (68020s and 68030s are 32-bit chips).

Sidewinder, Blastaball, World Darts and Ninja Mission are all part of Mastertronic's Super Select System of arcade machines. Nothing startling about that, but if you rip open the cabinet you will find a B52 board, which is basically a 2.5Mb Amiga. STs are used in arcade machines too. East Midlands Leisure use a bog-standard 1040 in their Intec System.

Thunder Blade (shown here), which comes from the same stable as Afterburner, is Sega's latest machine and houses two 68000s and a Z80A. The Z80 looks after 512k of 16-bit sampled sound. One of the 68000s is used as the main processor while the other generates sophisticated custom graphics chips and over 2Mb of graphic data. Around 8Mb of memory, read/write and read-only, are tucked away inside the cabinet. If you've eight Grand spare then you might consider this machine, otherwise you'll just have to keep pumping the 50p pieces.



■ *East Kilbride. Home of Motorola's Scottish semiconductor plant which produces microprocessors, single-chip computers, custom circuits and memories.*

offered by a 68K processor. Advanced telephone switching devices manufactured by Northern Telecom and Siemens use 68020s. AT&T's ESS central office switch uses the 68000.

Anything the '020 can do, the '030 can do faster. It's particularly biased towards graphic-intensive operations. Hence its use in simulators, desktop publishing outfits and design systems.

Life begins at 040

What's in the pipeline? Well, there's Motorola's third-generation 32-bit processor which is due later this year. The 68040 virtual memory chip, as it is to be called, claims compatibility with the existing 68K range, a floating-point unit, 8k instruction and data caches, and paged memory management.

The chip is firmly aimed at multi-processing applications – a high degree of parallel processing constructs and support for optimising ported Unix System V software tend to confirm this.

By the mid 90's Motorola will undoubtedly have an 68050 on offer. But what type of chip will it be? The 68040, and to a lesser extent the 68030, already suffer from an identity crisis. Will the processor be CISC (complex instruction set) or RISC (reduced instruction set) in nature? Will 64-bit be the next thing? Or will parallel processing and transputer clones be the order of the day? Whatever direction Motorola's chips take, you can bet powerful micros, minis and mainframes will follow.

COMMODORE CHASE 32-BIT SCENE

Rumour after rumour has been blurring Commodore's actual move into the 32-bit marketplace. Yes there are plans to produce a 68020-based upgrade system for existing A2000s. No there aren't any 68030-based Commodore machines in Britain.

The first piece of 32-bit action to reach A2000 owners will be in the form of an expansion board. This board will contain a 68020 hurtling around at 14Mhz (the Amiga's 68000 processor runs at a comparatively leisurely 8MHz), a 68881 or optional 68882 maths co-processor running at 14MHz (can be configured to run at 20MHz or 25MHz) and the 68851 memory management unit. Up to four megabytes of fast memory, which is accessed by the 68020 via a 32-bit data bus, can be added. It is estimated that the Amiga's performance will be increased four-fold by this board.

All this extra power means you can run Unix – an operating system that could well be the flavour of the 1990s. Unix's main claim to fame is that it is a true multi-user, multi-tasking operating system. It is used in mini computers and mainframes where the operating system's networking abilities are exploited to the full. For those interested, the Unix software will be system V, release 3, version 1.

Also on the way is the much-rumoured Amiga 2500UX. One possible configuration is an A2000 shell with a motherboard housing a 68020 and 4Mb of RAM, 100Mb hard drive, Unix operating system, tape streamer and monitor. How much for that little bundle? A whole heap of A500s. Around £20K for a configuration like the one mentioned, say sources close to Commodore.

What about 68030 development? As Dr Rahman Haleem, Commodore's Technical Support Manager, put it: "I would be lying if I said Commodore aren't considering the 68030 and I would be lying if I said Commodore have definite plans.' So you get the picture...

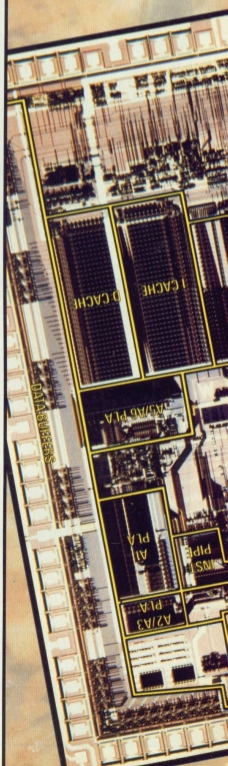
ATARI MOVING UP A GEAR

According to Atari's technical support manager, Les Player, a 68030-based Unix engine will be available early next year. The system will run at a staggering 20MHz, have 4Mbytes of memory, come with standard VME I/O slots and have identical graphics capability to the their Abaq transputer machine. The operating system will be Unix system V, release 3, version 2 which is currently under development.

New rumours indicate that Atari might be planning an ST Plus 'Amiga Beater'. While Atari won't comment on this, they have stated that announcements will be made at the PC Show. Speculation has it that the machine will offer 4096 colours, better resolution and stereo sound. One train of thought suggests that the 68020 processor could make an appearance in this machine.

ROAD WARS

Motorola's chips even make it into electronic engine control modules fitted to many popular European cars. These modules often determine how long a turbocharged engine can run at full boost. The information is stored on EPROM and, yes, hackers have managed to reblow these EPROMS with new data forcing the car's computer to run the engine at full boost for longer periods. The advantage is a faster car, but not for so long.



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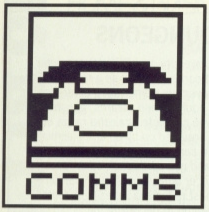
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RIDING THE WIRES



Mark Higham navigates the electronic ether and presents a sink or swim guide for those still wet behind the ears on the subject of communications. What do you need? What can you do? All is revealed.

Back in the good old days when 'Whizzkids' was on the TV at 5.05 every Saturday and most people thought that a Prestel mailbox was something yuppies had outside their front doors, a revolution began to take place. It began relatively quietly – a handful of enthusiastic programmers with access to a telephone line were just the start. Prestel grew gradually more popular and in its shadow a small army of bulletin boards (BBs) began to flourish.

Then along came the film *Wargames*, and the revolution hit the tabloids. Suddenly every BB was a front for the cloak and dagger underworld of computer hacking. Nobody could own a modem without being accused of tapping into top Government computers.

Although public opinion has hardly changed, the world of communications has altered a lot since then. There are now many opportunities to be gained from owning a modem, and few serious computer users would be without one.

Getting started

For those of you thinking of finding a piece of hardware to fill the RS-232 socket on the back of your micro, there is a legion of excellent modems to choose from. Modems are the boxes which convert computer data into audible signals that can be sent down phone lines. Many, many years ago, shortly after the New Testament was added to the Bible, most home modems used 'acoustic couplers', which fitted over an ordinary phone handset and whistled down the mouthpiece.

However, nowadays modems plug directly into a BT-style wall socket, and there are models which can dial the phone number for you if you prefer to reserve your index finger for other purposes.

Modems basically fall into two categories – auto-dial and manual-dial (the cheaper of the two). Auto-dial modems automatically configure themselves to the right speeds, and with the right software they can be used to dial the number and report if the line is engaged. The Microlink multi-speed modem lies in this category. It offers every conceivable option from listening to the telephone line through an in-built speaker to answering calls should you wish to set up your own board.

The manual-dial modems are more complicated to use, but there is often something reassuring about

COMMS SOFTWARE

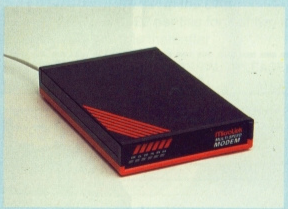
Most of the commercial services offer special package deals, bundling a modem, software, cables and subscription for a fair discount. These are all good deals, and your best way in. If you go your own way, you'll need to buy comms software as well as a modem:

■ *K-Comm 2* ***is an adequate package, and is the one chosen for the ST Microlink packages. K-Comm is available on both ST (£49.95) and Amiga (£29.95) – the Amiga version is cheaper because it can't work at 1200/75 baud, and so is unsuitable for Viewdata applications. Even the ST K-Comm is a bit slow building up Viewdata frames, which is frustrating as it's your phone bill that's rockets. Contact Kuma at 12 Horseshoe Park, Pangbourne, Berks RG8 7JW (07357 4335).***

■ *FastComm* ***is recommended for the ST power user. It costs £49.99, and is available from Atari themselves.***

■ *RubiComm* ***is generally reckoned to be a good comms package for the Amiga, and unlike much Amiga software is British. It costs £99 from Y2 Computing, 111 St. Albans Road, Watford, Herts WD1 1RD (0923 50161)***





■ ***Modems: the Tandata TM500, on the left, with Microlink's intelligent modem next to it. On a manual modem you have to set the speed from a panel on the front, plug a telephone in the back and dial by hand. Intelligent modems are controlled directly by your computer.***

HACKERS AT LAW

Hacking may well be a National Sport but it is still a criminal offence. Recently a computer hacker named Nicholas Whiteley was arrested for damaging computer record files belonging to the South West University Regional Computing centre at Bath. Whiteley stands accused of causing £60,000 worth of damage.

Even so, the law seems uncertain how to handle hacking. Two 'enthusiasts' (one of whom was Steve Gold, author of our Gold Dust column) were arrested for penetrating the Duke of Edinburgh's Prestel mailbox, but all the authorities could do was charge them with forgery. The two were acquitted.

LEARN THE LINGO

There are a few basic terms comms fans use to describe their systems:

BAUD RATE – the speed at which characters can be transferred down the link, normally expressed in bits per second. You can transmit and receive at different speeds, common ones being 300/300 (receive and transmit at 300 baud, roughly 35 characters per second), or 1200/75 (receive at 1200, transmit at 75). The latter is popular with Viewdata systems, where lots of graphics data needs to be received fast.

STOP BITS – extra bits of data sent to mark the end of a 'packet' of data.

PARITY – an extra bit after each byte to act as a checksum. Parity can be even, odd, or 'none' – ie. ignored.

Most comms services use 7 bits per byte (ie. no ASCII codes above 127 can be used), no parity, 1 stop bit.



■ ***Shades , the multi-user game, in action. The idea is to collect as much gold as possible and then pay it all back to Telecom when the telephone bill comes in.***

having to select the correct baud rates and terminal types from a front panel. At least you know what your modem is doing and it's not likely to cut you off when it decides that your phone bill is trying to compete with the National Debt *(though that may not be a bad idea - Ed)*. Auto-dial modems have little more than an on/off switch, and you have to appreciate their foibles; at the first hint of excessive line-crackle the modem logs you off with an impish twinkle in its Carrier Detect LED.

MULTI-USER DUNGEONS

MUD was originally conceived at Essex University on a DEC 10 computer, and versions now exist on many bulletin boards. Created as a real-time multi-user game, MUD is essentially an adventure game with a difference: instead of competing against a range of oddly named wizards, ghosts and goblins dreamed up by your computer, you compete against a range of wizards, ghosts and goblins with names dreamed up by other caller/players. You all play the game together at the same time.

You begin the game at novice level and rise up through other levels such as Warrior, Sorcerer and Necromancer until you eventually become a Wizard. As with all adventure games, a host of Indiana Jones-type deaths lie in front of you – from drowning in a swamp to becoming the victim of a contract killing.

One of the most well-used features of MUD is its chatlines. Players can exchange information about the game as well as hurl a few ill-considered insults at opponents. With a landscape which resembles the plains of Valperiso and characters out of Labyrinth, MUD will excite, tease and frustrate but never bore. If you enjoy the ordinary adventure game then you'll love the concept of MUD.

NatWest, here I come...

Once you've unpacked the modem, plugged all the right cables into all the right ports and read the manual from cover to cover, the time comes for you to dial a telephone number.



■ ***Compunet in action – it's got a wealth of tips, tricks and news items for Amiga and ST owners.***



■ ***Bulletin boards are becoming more professional. This is a screen from The nome at Home, a viewdata BB which charges a subscription.***

The first thing most people consider doing with their modem is trying a quick trip into the NatWest computer in some vague hope of altering their bank balance. Unfortunately, hacking is not nearly as easy as it looks on the television. Breaking into the local branch of the Open University is about as close as most people get to hacking, however, there are few golden rewards in a system devoted to the likes of photochemistry, oceanography and quantum physics. Getting into a system is one thing, finding it remotely interesting is another.

Micronet

Prestel started up several years ago and as the years rolled by began to establish itself in the communications market and eventually other specialist databases were added to it, among them Micronet.

Micronet might not let you book seats for *Phantom of the Opera* or the current location of Flight KT679 on its way from Iran, but not all of us want that. These areas are still the primary concern of Prestel. However, Micronet has sections ranging from music to MUD. The ST and Amiga sections have recently been combined, thereby providing a regularly updated service and, revised weekly, letters sections for both computers.

One of Micronet's most popular sections is *Shades*, it's own multi-user game. Beating up the bad guys during your search for elusive treasure, Shades is an off-shoot of MUD (multi-user dungeons). Unfortunately, as with almost all the multi-user games, the amount of sparkling treasure that you accumulate is more than compensated for by the large telephone bills that it takes to get it.

Compunet

Compunet has taken the Viewdata graphics of Prestel one stage further. To most people, the philosophy of an ST or Amiga emulating a Commodore 64 is about as sane as driving a Porsche like a pedal car. However,

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For the *AMIGA* MONTHLY MAGAZINE ON A DISK **SEP '88**

Vol 3, Issue 9, No 29

JUMPDISK



"Lou, hold page one! JUMPDISK is here!

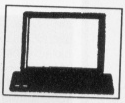
and it looks like they got the VIRUS beat !
With this radical new virus protection ability you can copy boot blocks of commercial software to a 'safekeeping' disk ! What. Lou ? Yes of course there's a program to spot the new virus. Virus X1.5 is the latest and the greatest. And say Lou did you know JUMPDISK is available from George Thompson Services., Freepost, Dippen Estate, Brodick, Arran, Scotland KA27 8BR and still costs only £8.50 inc.

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X-rated SIGs

Apart from the usual sections, many boards are now distinguishing themselves by offering a myriad of unusual features. Far and away one of the best boards currently on line for the Amiga is MABBS in Birmingham. It is designed primarily to cater for Amiga owners, the board itself actually being run on an Amiga. As well as providing Amiga software it has special interest groups which bring heavy-breathing phone calls right into the electronic age. Once your privilege level has been suitably raised, you can access a host of options from hacker boards to an astonishingly detailed adult group entitled 'The Erection Section'. We're sure you get the idea.

this is what Compunet demands of its users. Despite this, Compunet is based upon very sane principles. All of the other systems discussed, most especially the bulletin boards, expect your software to convert your computer into little more than a dumb terminal. Compunet, on the other hand, demands that your processor does some work. For this reason, the software needed to access the system must be specialised.

Because of this, Compunet is an impressive system, far more appealing than Prestel and almost idiot proof. It is specially aimed at Commodore owners – C64 and Amiga, but a new ST section has just opened too. It originally set out to encourage communication between its users with the result that subscribers can do everything from starting their own interest groups to selling their software. The 'Party Line' was established to promote conversation, and a special 'Rooms' facility allows you to call people into one room for a discussion.

Behind the advantages of the Compunet system lies one very major drawback. Because of the mixture of graphics and text as well as an error-checking routine, Compunet is slow, dead slow at times. It runs at 1200/75 baud. By the very nature of Compunet you are encouraged to send a lot of data. At a transmit baud rate of 75 you could die of boredom, find yourself bundled into a coffin and cremated before a page of text was successfully sent.

Microlink

Microlink is a simple text system, and it lacks the flashy graphics of Compunet or Micronet, but it has come a long way in its three year lifetime. It's probably the most business-orientated system of those discussed but that is not to say that it should be dismissed. Microlink can be accessed through British Telecom's network of local-dial 'PSS' numbers, thereby permitting baud rates from 300/300 to 1200/1200. These faster rates save a lot of time especially when uploading or downloading files.

Sending Telexes from John O'Groats to Land's End (one of Microlink's features) might not hold much appeal for those without offices near the Stock Exchange, and Microlink has not forgotten that some people have other interests. Aside from extremely powerful mailing facilities, tele-booking services and business news, Microlink possesses a gateway into Mnematics, a US bulletin board. Within seconds you can be linked, via satellite, to a computer in Sparkhill, New York. Mnematics is a popular American board with special interest groups ranging from literature to UNIX systems. In addition, you can chat to North American users. Interactive computer games are provided such as 'The Dulcimar Crystal', set in the year 2085 on a Star-Trekian ice planet named Cryocrysta.

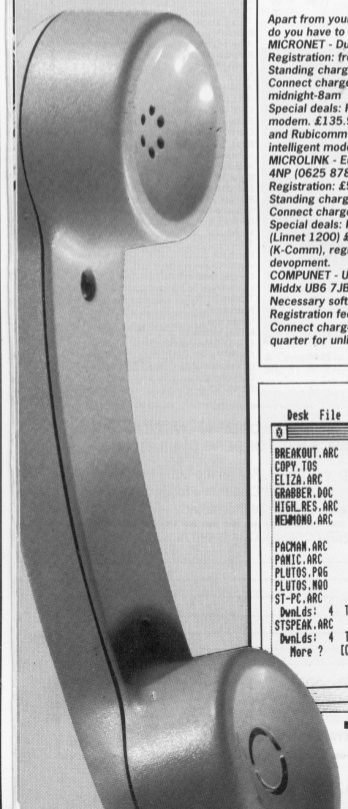
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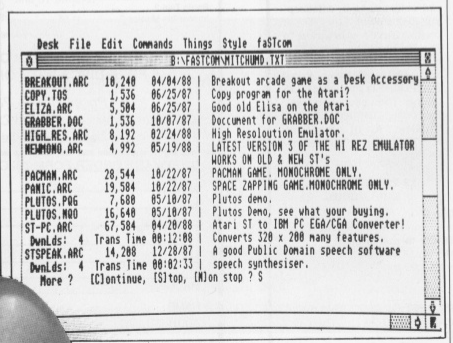
Apart from your phone bills – not an insignificant factor in themselves – what do you have to pay to use the commercial services?

MICRONET - Durrant House, 8 Herbal Hill, London EC1R 5EJ (01-837 7872)
Registration: free
Standing charge: £20/quarter, £1 extra for Telecom Gold access
Connect charges: 7p/min 8am-6pm, 1p/min 6pm-midnight, free midnight-8am
Special deals: Pay a year in advance (£79.95) and get a free GEC manual modem. £135.95 buys Amiga owners a year's subscription, modem, cables and Rubicomm software. 'Propak' at £236.40 is a year's sub, Linnet intelligent modem and software.

MICROLINK - Europa House, Adlington Park, Adlington, Macclesfield SK10 4NP (0625 878888)
Registration: £5.00, £10 extra for Telex facility.
Standing charge: £5.00/month
Connect charges: 11p/min peak, 3.5p/min off-peak
Special deals: Manual modem (Pace Nightingale) £99, Intelligent modem (Linnet 1200) £169. Price includes connecting cables, ST comms software (K-Comm), registration, telex + 1 month's use. Amiga software under devopment.

COMPUNET - Unit 26, Sheraton Business Centre, Wadsworth Road, Perivale, Middx UB6 7JB (01-997 2591)
Necessary software: £24.95 for ST and Amiga
Registration fee: £12.00 ('Standard') or £19.50 ('Gold')
Connect charges: 80p/hour. Gold members can optionally pay £10 per quarter for unlimited connect time.





■ *A fairly traditional bulletin board .*

Beyond the fringe

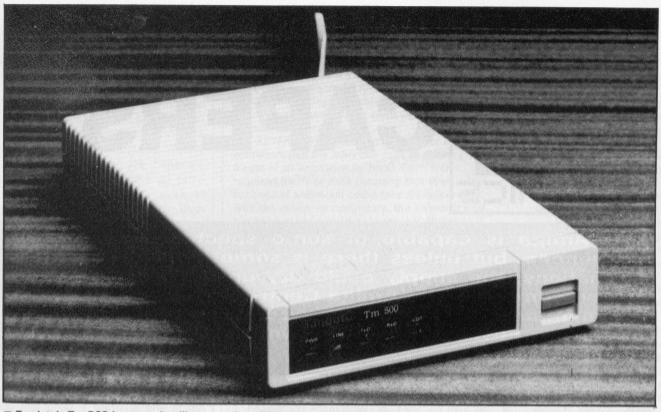
For those of you who didn't get a year's free subscription bundled with your modem, a telephone call to the nearest bulletin board – hobbyist-run equivalents of the commercial services – is probably the first thing you'll try. Bulletin boards devoted exclusively to the ST or Amiga are now rife, offering everything from help in surviving the fourth screen in 'Airball' to information about where you can lay your hands on the pirated version of *Armadillos in Space* (*only so as you know where to send the FAST heavies round to, of course – Ed*).

In addition to messaging and help sections, the majority of boards now offer the opportunity to download software. There was once a time when the software available on bulletin boards was about as useful as a 20 Meg hard drive for the ZX81. However, most software now comes free and can be of interest to both the seasoned programmer and the loyal games player.

With a range of boards emerging which are devoted exclusively to individual computers, bulletin boards are now serving a very useful purpose. '01 for Amiga', a relatively new board, provides all kinds of help for Amiga owners as well as offering masses of virus-checked software.

Trips around the universe

For ST users, the premier board is the Carshalton Atari BB. ST utilities programs and pictures are available to the registered user. If the thought of downloading software from a BB conjures up memories of sickly-yellow BT envelopes, then the Sysop is will-



■ *Tandata's Tm 500 is a very intelligent modem. Well, it must be; it doesn't have any buttons. The Tm500 offers auto-dial, Hayes compatabiltiy, V21 300/300, V23 1200/1200, 1200/75 and 75/1200 - and all for £171.35.*

ing to post software to your address if you send him a blank disk.

Those who like tripping around the universe or exploring the darkest caverns of some mystical paradise may well find the Carshalton Atari BB of interest. On offer is a list of all currently available multi-user games as well as a selection of guest passwords into a multitude of MUGs.

As with many systems, one telephone call to either of these specialised bulletin boards can provide you with the telephone numbers of several others. The majority now tend to offer features besides downloadable software, which appeal to a greater audience.

One of these is MBBS Mitchum which, as well as providing ST software, has some excellent hardware deals primarily for the Amiga. Everything from an ECE MIDI interface at £47.77 right up to a 20 Meg Supra hard drive for the A1000 at £560.00 is available.

However, if it's shopping by phone that you want then a few calls to DISTEL with a credit card number can cause infinite harm to your bank balance. Purchasing hardware for any computer is quite literally as easy as pressing a few keys.

No place like Gnome

Without doubt, Viewdata systems offer that hint of sophistication absent from your common-or-garden bulletin board. There was once a time when Prestel was the only system providing colour on the phone lines and that came at a price, but there are now many free bulletin boards supporting Viewdata.

The Gnome at Home board serves anyone with a penchant for technichrome garden goblins. Being a Viewdata system, the board can take full advantage of colour and graphics with its kaleidoscopic gnomes which are used to guide you around the different services. These services include a chatline, ST and Amiga sections as well as its own game, 'The Dwarfen Realm'. This board is not entirely free, although there are many features available to those who do not wish to pay. But at £4.50 a quarter, subscription is unlikely to leave too much of a dent in most people's beer money.

Back home...

The field of communications is a rapidly expanding one and it has a lot to offer anybody prepared to make the call. The times when all that bulletin boards had to offer was a list of other bulletin boards and a messaging section has long since passed; even Prestel is no longer a flashy way of reading the weather forecasts. From wide-ranging entertainment to extraordinarily interesting and useful downloadable software, the telephone lines are crammed with information. There is a whole new world opening up out there. Whether you want to play multi-user games or prefer the seedy delights of an adult bulletin board, there is something out there for you; pick up the phone and find it.

SYSOPS

A SYSOP is not some new brand of American breakfast cereal, nor is it an exercise for people with stammering difficulties. SYSOP actually stands for SYStem OPerator and refers to the person in charge of a bulletin board.

BITE THE BULLETIN

If you're looking to throw caution (and your phone bill) to the winds by exploring the nation's bulletin boards, here are a few numbers you could try:

NAME	*PHONE*	*BAUD RATE*
CBABBS Birmingham	*021-430 3761*	*300*
Carshalton Atari BB	*01-773 0408*	*300, 1200/75*
DISTEL	*01-679 6183*	*300, 1200*
Gnome at Home	*01-888 8894*	*1200/75*
MABBS Birmingham (Amiga)	*021-444 8972*	*300,1200,2400*
MANCUNIAN	*061-227 9096*	*300, 1200/75*
MBBS Mitchum	*01-648 0018*	*300, 1200/75*
01 for Amiga	*01-377 1358*	*1200*

Set your modem to the correct baud rate as shown, dial up, and you'll usually get a welcome screen asking you for your name. On your first time you may only be allowed limited access, but once the Sysop has had time to give you an account and password you'll have fuller reign.

If you're feeling transatlantic, it's possible to log on to American bulletin boards. Ignoring the cost of the call, the one major hurdle in contacting American boards is the different phone tones over there.

The majority of US systems use 300 baud to transfer data. If this is your first time, try the Chicago CBBS/CPMUG board, available on 0101-404-636-6130; it's one of the better US boards. American Sysops love British users and this one is no exception. Tell him that you're calling from the UK and he'll give you a top access level.

GRAPHICS

CARTOON CAPERS



■ *Here's looking at you – instant digitsing at the entrance to the Animation*

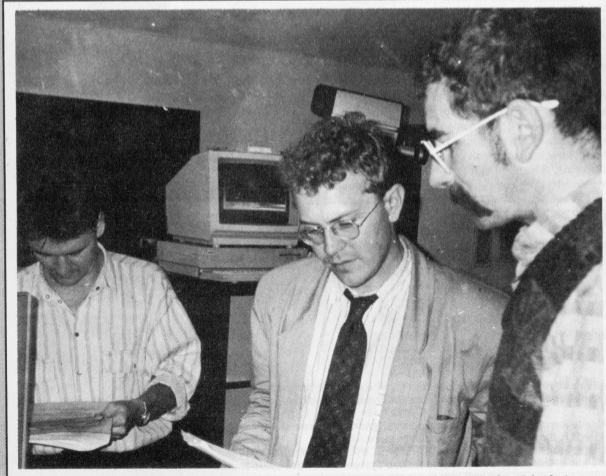
The Amiga is capable of some spectacular animation sequences, but unless there is some stimulus to create animations, the supply could dry up. It's great to see a British company, The Amiga Centre Scotland, sponsoring an animation competition to coincide with this year's Edinburgh Festival. Format's own Andy Storer was there for the judging.

Between 11th and 20th August, those inexhaustible enthusiasts at the Amiga Centre Scotland played host to an exhibition of Amiga animation as part of the Edinburgh Festival. Up to 60 people a day were greeted by the Live! real-time digitiser displaying their entrance at 16 frames per second. The dozen machines on hand ran continuous loops of some of the more famous Amiga demos. The Juggler and Basketballer played alongside the Achilles Probe Sequence and Khanankas Newton's Cradle, whilst the new Fantavision package from Broderbund showed off its Dinosaur and Porsche movies. A series of workshops organised by The Centre accompanied the exhibition and attracted over 200 people from around the world, giving many who'd never even seen an Amiga the chance to experiment with its various animation packages.

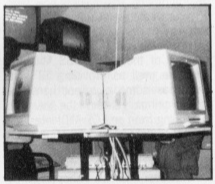
Among this unexpectedly hectic activity was an animation competition which attracting 11 applicants – there would probably have been more if most of the press coverage of the end of July deadline hadn't surfaced in August! Quality before quantity, though, and all the entries reflect the tremendous advances made in micro animation since the arrival of the Amiga and illustrate a skilful use of the most popular packages – Sculpt-Animate 3D and Apprentice Animator.

Submissions could be made on either disk or PAL video and prizes were given for each format. Despite the presence of what looked like 4th generation TV conversions mixed with Never Twice the Same Colour (NTSC) entries from the States, tape entries were more varied than those on disk.

As there were no stipulations on length or content, or even origination – the brief was to submit animation 'generated' by an Amiga – several entries simply used the machine to relay digitised artwork. Phil Dobson's tape, for instance, consisted of 10 entries featuring masses of graffiti style murals intercut with pop art stills dubbed over with an Amiga originated soundtrack.



■ *Judges Brian Carroll (left) and Paul Marks (centre) compare notes with Iain Anderson (right) of the Amiga*



■ *Twice as eyeboggling – pairs of monitors display the entries.*

Screenplay Productions 'Merry Christmas' on the other hand, animated puppets to create a sub-Disney cartoon caper whilst Dan D. Wyle's Election Olympics, voted Best Tape Entry despite suffering from NTSC conversion, displayed an interesting mix of computer-generated graphics and digitised images without using genlock control. Although a lot of the American campaign humour was lost in the flight across the Atlantic, the

resulting lengthy narrative was deemed head and shoulders above the rest.

The winners

It was material wholly originated via software that captivated judges Brian Carroll of Scope Pictures and Paul Marks of Popular Computing Weekly and took the prizes. Joe Benzing's *Lampo* collected a runners up prize even though it represents work in progress. With key frame animation featuring two desk lamps performing a short choreographed dance, Lampo is still at the wire-frame stage of production. Given rendering and full ray-tracing the end result would have easily won the competition. These enhancements are extremely hit and miss and time-consuming, though, so it's unlikely to make an appearance in final form before the end of the year.

Best Disk Entry was awarded to Gary Whitely for *The Wheel*; a revolving wire-frame ferris wheel with solid 3D head, hands and feet revolving within it. The complexity of interaction between the moving parts of the piece must have taken a great deal of careful planning since the animation was very fast and involved partial object rendering or 'clipping' in its rotating motion paths.

Mark Wirt's *MWA Logo* was voted Best Overall Entry. This was a key frame animated head featuring full ray-tracing. The moving green alien head is an animated sequence stored in memory in compressed form using a Byte by Byte compressor developed by Sculpt 3D's Eric Graham and placed in the public domain. This allows compressed images to be expanded in real time and run at up to 60 frames per second. The MWA Logo was built up from a matrix of triangles before treatment by a smoothing algorithm and subsequent ray tracing. The resulting animation includes not only simultaneous left/right/up/down movement but flawlessly smooth sizing changes along with a cascading logo.



■ *This hi-res colour rocking chair will give you an idea of things to come – developed using Sculpt 3D on a Honeywell workstation, using up to 2 million colours at a resolution of 1280 x 800. It can be run on an Amiga but not shown in its full splendour.*

TECHIES CORNER

Key framing? Rendering? Once again the computer industry lives up to it's name for totally confusing the average person. ST Amiga Format, champion to the cause of bringing plain English back into the industry, attempts to cast some light upon a subject enveloped in jargon.

KEYFRAMING: Before the arrival of computers, animators had the laborious task of drawing every frame of an animation by hand. Each frame required hours of work meaning that even a few seconds of animation could take literally weeks. With the advent of computers, the animator's job has been made considerably easier. Using Keyframing, the animator only has to produce the major frames of animation and the computer generates the frames in between using a system called 'tweening' (inbe-tweening, geddit!).

SPLINES/B-SPLINES: Most solid 3D objects within animations on the Amiga are developed completely as wireframe representations. Each static line within the framework of an object is called a Spline. When an object is moved, its corners can be seen to moves through a set path defined as a continuous line, or B-Splines as they are properly known.

CLIPPING: If you've ever played StarGlider or any game with 3D graphics then you will have seen examples of Clipping in action. When a 3D object appears in the distance, all of it can be displayed on screen at once. As that object moves nearer to you it naturally grows larger and eventually reaches a point when it can no longer be displayed on screen in its entirety. Clipping is deciding which parts of the object are visible on screen, and not bothering to draw the rest of it.

RENDERING: Once a 3D object has been built up into a wireframe representation, the next step is to build it up into a solid 3D object. The process of Rendering is much like stretching a skin over the wireframe object so that it appears solid.

PHONG AND GURU SHADING: After filling the surfaces of a 3D wireframe object, you can still see the edges of the wireframe structure supporting it. Using Phong or Guru shading, it is possible to smooth out the edges of an object. This process is carried out during the Rendering of the object.

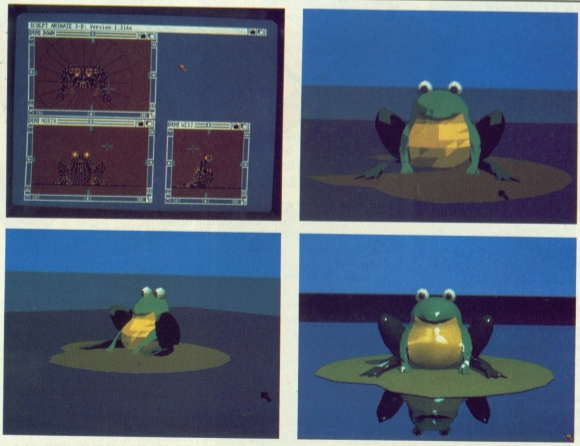
RAY TRACING: When the human eye sees an object, it is not in actual fact seeing the object itself but the light reflected by that object. This is why we are unable to see much at night. Ray tracing works on this principle by calculating how light is reflected from an object. The ray tracing process can take a considerable amount of time depending on the complexity of the image, as the colour of each pixel and angle of each solid face must be calculated before the final picture can be displayed.



■ *The Amiga Centre logo – a Sculpt 3D design*

Animated future

Next year the organisers intend to repeat the event with Commodore perhaps taking a more active part in the publicity by arranging limited TV coverage. Animation techniques are advancing rapidly so 1989's competition should be worth seeing. At any rate, you now have a whole year's advance notice so get rendering and ray-tracing for the likely prize of an A2000 and possible satellite TV coverage!



■ *A frog in progress using Sculpt 3D – first the shape is drawn as a series of wire-frame figures (1), then roughly visualised from any viewing angle (2 & 3) and finally fully ray-traced (4). 'Sculpt Animate' can animate Sculpt 3D objects with real-time wire frame preview mode and image compression and expansion.*

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REVIEW

STOS

Is games programming only for whizzkid propeller heads with high foreheads and acne, or can anyone have a go? Mandarin Software would like to persuade you that with an ST and STOS you can move mountains, or a few sprites at the very least. Richard Monteiro checks it out.

ST version reviewed ■ Amiga version possible ■ £29.95 ■ Mandarin ■ Europa House, Adlington Park, Adlington, Macclesfield SK10 5NP (0625 878888)

Yet another implementation of the BASIC language for Kemeny and Kurtz to grieve over. For that is what *STOS*, the result of two years work by French software house Jawx, is. Ipn this country it is being sold under the title of 'Games Creator', and is claimed to take the hard work out of game development.

Eight-bitters have been treated to a host of games creators; at one point it seemed the professional games programmer would become obsolete with so many utilities claiming to achieve so much. How many titles produced with these packages have made it onto the shelves of Boots and Smiths? Few. And the quality? Poor. Fact is, none of these programs perform to the expectations of users. So why are Mandarin quietly confident about their package?

Wot? No GEM!

Remove GEM from an ST and you have a machine that really can perform. STOS BASIC replaces GEM functions – windows, icons, alert boxes, item selectors – with its own proprietary features. If you've ever tried to change resolution while working under GEM, doubtless you will be aware of the confusion this causes the system. No problem with STOS. You just type in a command and it will flip happily from 40 columns to 80 columns and back. Furthermore, as STOS ignores GEM, you have more memory to play with.

If STOS is booted directly from disk rather than from GEM, you will have an extra 32k of program space – worth having, particularly on 512k micros. If you've had any previous experience with BASIC then STOS will look familiar. It's like most interpreted BASICs: instructions are executed immediately or at a particular instance (usually when you type RUN) if preceded by line numbers.

The editor, which is the first part of STOS you see after loading the package, is used for writing programs, sorry, games. Most things expected of a text processing tool are present. Particularly handy is the ease with which function keys can be assigned commands. Details of these are constantly displayed at the top of the editing screen. Editor options are themselves held in a BASIC file, which can be edited. Hence, you can determine which resolution and colours STOS boots up in, define function keys to store your most used BASIC instructions and even load accessories into memory (more on these later).

The system can hold up to four programs in memory at once, completely independent of each other. You could be writing the next *Format Gold* game, switch to another program segment for a quick game of Breakout and then resume your programming. Memory is allocated dynamically to ensure that there is no space wasted. Even better is the fact that you can display all four program listings on the screen at once.

STOS includes some very powerful functions for manipulating sprites, screens and music. Each BASIC listing uses special areas of memory (known as banks) dedicated to data handling; each bank, of which there are 15, has a unique number. Most banks can be used for all types of data, with a few dedicated to just one sort.

Making music

There are numerous commands for accessing the ST's sound chip. The easiest is to type a command such as BOOM, SHOOT or BELL – pre-defined and rather basic sounds, but ideal for the beginner. More complex effects and tunes are just as easily produced. Music can be composed with one of the STOS accessories. The resultant data may then be played and manipulated by STOS BASIC commands. The music plays in the background (under interrupt) which means you, or your program, can get on with other things, including editing the rest of your program.

As STOS isn't GEM based (the manual makes sure you are aware of this), it should have been easy for Jawx to provide all 512 colours on screen at once. They haven't allowed this, but as some compensation you can alter the height and width of the screen; and there is a command for cycling through the entire 512 colour palette. Graphic functions are plentiful with many GEM-like instructions thrown in. Rectangles, circles, polygons and lines can be drawn in any size, style and colour. There are 65536 combinations of line-type ranging from dotted to dense and thick to thin. Similarly, shape-patterns are almost endless.

One of the biggest headaches facing programmers is writing efficient graphics routines that will work in precisely the same way no matter which mode the ST is running in. STOS overcomes this by providing the programmer with DIVX and DIVY. These hold values denoting the current width and height of the display area expressed as a fraction of those used in mono mode. Thus RBOX 0,0



■ *STOS's shifter feature in action. All the ST's 512 colours can be cycled through using just one command.*



GAME CREATORS

So what's out there to compete with STOS? Well, on the language side there are lots: Power BASIC, GFA BASIC, FAST BASIC, ST BASIC. But it's unfair comparing STOS with these packages as its commands are biased towards fast graphic handling and other instructions necessary for game creation. There's STAC from Incentive, but that's specifically for adventure creation and consequently is limited to still graphics and text manipulation. Palace have the Shoot-em-up Construction Kit on the way and CRL are soon to release the Sprite Factory, but in the meantime STOS is unique on the 16-bit front.

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TO 639/DIVX,399/DIVY would generate a full-screen size box in any resolution.

Left, sprite, left

Probably the most difficult aspect to creating a game is designing and animating sprites. STOS comes with a sprite definer – in accessory form – that is good enough to be sold on its on. Problem number one solved. As for animating the sprites, relax; up to 15 moving sprites can be placed on screen at any time. You don't have to do any work: just supply the flight path, speed, number of frames and the sprite will work away independently of the rest of the program. That's right, under interrupt. It's fantastically easy.

Two screens are held in memory at any time. The first, the physical screen, is what is displayed on your monitor. The background screen, however, is buried somewhere in memory and is used by sprite commands. Anything that requires redrawing is done on the background screen where it can't be seen. Extra screen slots can be reserved in memory which can be put to good effect in slide shows.

Other screen tricks include zooming, reducing and copying sections of video memory. Also, screens or sections of screens can be loaded into BASIC string variables and then handled as such. The possibilities are staggering – but the most usual is to create complex background arrangements out of several defined screen strings.

Scrolling, which is another area of interest to the games programmer, is provided as a STOS function with options for moving portions of the screen in any direction. Up to 16 different scrolling zones are permissible at any time.

Did it move for you?

There is much to STOS that is good. It's a competent version of BASIC with some magnificent commands for aiding the games designer. The idea of keep graphics, sound and sprite data in banks really does make it easy for the programmer. And the accessories: brilliant. But will it work for you?

Mandarin hope so. They seem keen to publish games that are created with their system *(We've heard that one before – Ed)*. To prove that they *really* are serious about STOS,



LOADING AND SAVING

Power is what STOS operations offer. Most BASICs allow you to save data in either ASCII, binary or tokenised format. Depending on the extension given to a file, STOS treats the data in a particular manner:

BAS – standard BASIC program.
ACB – STOS accessory.
PI1/2/3 – Degas format screen.
NEO – Neochrome screen.
MBK – one bank.
MBS – all banks.
VAR – defined variables.
ASC – ASCII file.
PRG – executable file.

Run-only programs can be created simply by saving standard STOS BASIC files with a PRG extension. These files can be executed from the GEM Desktop like all PRG programs. Files created this way aren't compiled; instead STOS (minus editing facilities) and the BASIC program are saved together.

Most programs written in a high level language will fail to boot from an AUTO folder: GEM doesn't initialise properly in this situation. No such problems with STOS programs as they don't require GEM.

STOS accessories, the things with ACB extensions, are special BASIC programs that lie dormant in the ST's memory until invoked. They co-exist with the current BASIC file being edited and are, in fact, editable BASIC programs themselves. They work in much the same way as GEM accessories and can be anything from screen compactors to sprite designers. K count withstanding, you can have 12 accessories in memory at once. Any BASIC program can be saved in accessory format simply by adding an appropriate extension.

THREE DISKS WENT SAILING BY

STOS comes with three disks. One contains the BASIC language itself, another contains accessories and demo files, and the last holds three STOS-created games.

The games: Bullet Train (horizontal-scrolling action), Zoltar (shoot-em-up written in three days), Orbit'(Arkanoid clone). While they are all reasonable, you wouldn't expect to pay for them. Still, if, as Mandarin say, the games were written in a short space of time then there's reason to be impressed. The demos are not that large either between 50k and 100k.

Eleven accessories came with the review version; although how many come with the final release is anyones guess. They're all utilities designed to take the strain out of programming. Included is a screen compactor, font generator, icon editor, memory monitor, pointer finder, music composer and sprite creator.

The music composer allows you to assign notes to staves. Three staves are present; one per channel. Unfortunately notes can't be planted directly on the staves. Instead they must be entered in the form C#, E, F and G – very monotonous and extremely unweildy for the learner.

Two sprite designers are available: one for monochrome use, the other for colour. These accessories really are classy. Options for flipping, rotating, animating and grabbing sprites exist. Sprite data can be purloined from commercial software and used in your programs. Naughty, but nice. Backgrounds may be loaded so that sprites can be checked for colour clashing.



■ *Huge objects can be moved around the the screen with ease.*

Mandarin are setting up a club for users to swap ideas and programs. They also intend to add extra features to STOS like 3D vector graphic routines, landscape generator and graphic extensions (this will give you facilities for bending and stretching images). These additions will comes as files which simply slot into the STOS folder; once they are there, the new commands become available. You will be able to add commands to the system, but this information will only be divulged through the user club. STOS programs are by no means slow, but with the addition of a compiler (pencilled in for November) some incredibly snappy programs could result. Price for this will be around £20.

Even without these extra functions, STOS is amazing. Price, power and performance guarantee its success. Whether we see STOS sizzlers on the shelves of Smiths remains to be seen. That's up to you.

for

- Three packed disks
- Novel banks and accessories concept
- Superb interrupt-driven sprite commands
- Stand alone programs can be created

against

- Good command of BASIC necessary
- Sound composing acces sory is poor

STOS FAST FACTS

Number of commands: 320
Language size: 230k
Program area (520): 228k
Animated sprites: 15
Accessory limit: 12
Programs in memory: 4
Run-only overhead: 170k

SERIOUS SIDE

Although STOS is being hyped as a games creator, it has plenty of functions for spreadsheet and database afficionados. Random access file handling and floating point, for instance. Couple that with all the graphics commands and you could produce some very interesting serious applications.

features 0 1 2 3 4 5

performance 0 1 2 3 4 5

ease of use 0 1 2 3 4 5

manuals 0 1 2 3 4 5

format value 0 1 2 3 4 5

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DATABASE EXHIBITIONS

PD UPDATE

Every month dozens of new Public Domain programs are written for both ST and Amiga. How do you know what's out there and what's worth getting hold of? Ben Taylor and Elliott Stein begin a regular monthly report.

AMIGA

The ubiquitous Fish Public Domain library (so called because it is collated by the energetic Californian Fred Fish) just keeps on growing. Since our last article on Amiga PD in issue 2, twenty more disks have been released, numbered 126 to 146.

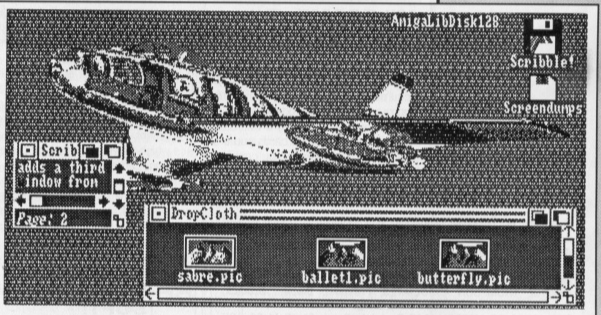
Featuring strongly on the agenda for this new batch are demonstration animations from the latest 'Badge Killer Contest'. For the graphically inclined, these are the results of an annual animation competition held by the San Francisco Bay Area Development Group (hence 'BADGE'). There's not much to say except that they're all very impressive, and particularly if you have aspirations to be a hotshot graphics programmer you will find it useful to get hold of **Fish #132** with the 'Berserk' animation. This is a complex arrangement of spheres and bicycles, complete with the source code used to generate it.

Still on the animation/graphics theme, **Fish #146** carries a demo copy of *C-Light*, a commercial ray tracing program for calculating shading and reflections to add pizzazz to your graphics. The demo version can only handle ten objects per screen, but is still useful for learning what ray tracing is.

Here are some of the more noteworthy specific programs:

DROPCLOTH – Disk 128

Does the boring solid blue background screen on your Workbench annoy you? Dropcloth takes a picture file and uses that as a backdrop to all your windows. The only restriction is that, because the Workbench only uses four colours, your backdrop must be a four-colour picture, in low resolution 640-column format. Most pictures, it has to be said, look pretty ropey when reduced to four colours, but it's an amusing novelty.



■ *Dropcloth (Amiga, Fish disk 128) with a Sabre fighter as the Workbench backdrop*

DMOUSE – Disk 145

PD PLATINUM

This little utility was written by an angry mouse user. When you have 25 windows open on the screen at once it can get very annoying to have to click on the send-to-front/back gadgets of each to find the one you want. With DMouse active, your mouse's operation is changed:

Whenever the mouse is moved onto a window, that window becomes 'active'. You don't have to click the mouse button on it.

Clicking the mouse button *anywhere* in a window will bring it to the front – you don't have to find the tiny gadgets at the top right of the window.

BROWSER – Disk 134

PD PLATINUM

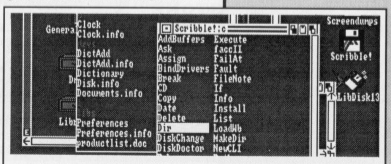
If you would dearly like to use all the PD software you can find, but just can't understand how to use the CLI, then this could be for you. Browser is a program which can be run from a simple Workbench icon-click, which shows all the files on the disk whether they have icons or not.

When you first run it you get a small window showing all your disk names; click on one, and its root directory appears. All files are in white, and subdirectories in orange – click on a subdirectory and its files are listed.

You can copy files by dragging them to other windows, rename or delete them and create new directories all from a Workbench menu. What you can't do, unfortunately, is run them. You'll still have to open a CLI window for that.

SBPROLOG – Disks 140/141

A heavyweight entry for serious programmers here. This comes on two



■ *Browser (Amiga only, Fish disk 134) in action. You can even see files without icons from the Workbench.*

SKULL CRACKER

The prize for the most bizarre Amiga PD programs yet seen go to disks 137 and 139. The first includes a 'Wheelchair simulator' utility, while the second is a body scanner controller complete with sample scans of the skull, brain, heart and spine. Could be handy if you keep a body scanner in the back room.

PD PLATINUM

What is PD Platinum ? PD Platinum is our accolade for titles of such quality, originality and competence that you ask, "Why isn't this being sold commercially?" It also covers titles which gradually become an indispensable part of your machine, titles you'd gladly pay a king's ransom for.

disks, one for the program itself and the second for the source code.Prolog, in case you didn't know, stands for 'PROgramming in LOGic' (it was a French invention, which is why its back to front), and is the language much touted as being at the forefront of Artificial Intelligence research.

Although we haven't had time to test it thoroughly, it looks to be a full implementation of the language with some very useful extensions. It comes courtesy of Arizona University's Department of Computer Science, so has a good pedigree. One warning though – don't even think of using it without a megabyte of RAM, and two is better.

ST

MILEGAME

This month on the ST we'll concentrate on PD games.

Milegame is a car race with cards. The object is to be the first to accumulate 1000 miles per game and reach over 5000 to win the set.

To start out, you play a Roll card – and if one of the five cards you are holding isn't a Roll card you continue to discard and receive another till you get one. After you play a Roll card, you can play a mile card – 200, 100, 75 or 25 miles, and you score that number of miles.

Instead of scoring miles, you can elect to prevent your computer opponent from racking up miles by playing a hazard card such as: Out of gas, Accident, Stop or Flat Tyre... to which your opponent must continue to discard and pick up another till receiving the correct corresponding remedy card: Gas, Repair, Spare Tyre.

There is also the 50 MPH Speed Limit which can only be remedied by playing an End Speed Limit card and the Right Of Way, Extra Spare Tank, Permanent Spare Tire and Driving Ace which provides game-long protection from particular hazards.

If the rules sound complicated, fear not – after one game you immediately get the knack... you can also become very addicted to this one so beware- you might be up to the early hours of the morning playing with itz

THE SUPPLIERS

In the UK, the following companies that we know of supply ST and Amiga PD software. There is no ST cataloguing system like the Amiga Fish numbers, but the good ST libraries will carry a wide selection of popular programs including the ones in this article – just ask.

GEORGE THOMPSON ASSOCIATES, Freepost, Dippen, Brodick, Scotland KA27 8BR (077 082 234). Amiga only. £3.00 each.

THE AMIGA PD LIBRARY, 140 Rushdale Road, Sheffield S8 9QE (0742 588429). Amiga only. £3.00 each.

SOFTVILLE, 55 Highfield Avenue, Waterlooville, Hants PO7 7PY (0705 266509). ST and Amiga disks. £3.00 each.

FLOPPYSHOP ST, 50 Stewart Crescent, Northfield, Aberdeen AB2 5SR (0224) 691824. ST only.

PAGE 6, PO Box 54, Stafford ST16 1DR (0785) 213928. ST only.

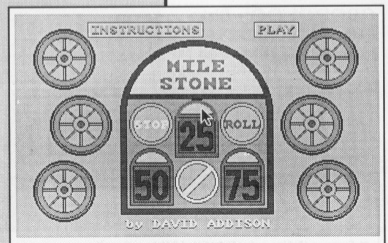
THE SOUTH WEST SOFTWARE LIBRARY, 5 Barn Owl Way, Stoke Gifford, Bristol, Avon BS12 6RZ. ST only.

STAR UK, 50 Bridge Street, Aberdeen, Scotland ABI 2JN (0224) 593024. ST only.

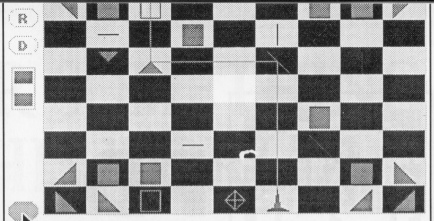
If you run a Software Library and would like to be mentioned on this list, or if you are a library or programmer with titles worthy of mention please let us know.

For the Amiga, write to: **Amiga PD, ST Amiga Format, 4 Queen Street, Bath BA1 1EJ.**

For the ST, write to: **Elliott Stein, c/o BITS Entertainment, 67 Sutherland Avenue, London W9 5HF.**



■ *The opening screen of Milegame (ST only).*



■ *Laser Chess (ST) sets up for a battle*

ROCK HARD SOFT!

The next diversion is an intriguing game of video pool. Using the mouse, you position the pointer on the table in the direction which you want the cue ball to go.. A speed indicator at the bottom of the screen registers the speed at which the ball will travel. By manipulating the speed of the cue with the pointer's aim, you soon acquire the skill necessary to reach scores over 1000.

A true game of skill and a close simulation to what a game of pool is really like. Balls, cue and chalk not provided.

LASER CHESS

What do you get when you take the age-old challenge of Chess and bring fantasy into it? You get *Laser Chess*.

Each side possesses a front line of Triangular Mirrors, a Diagonal Mirror, the Laser, a King and a Hypercube. The second line consists of Triangular Mirrors, two Blocks, a Beam Splitter, a Horizontal Straight Mirror and a Vertical Straight Mirror.

Where your Queen would normally stand you have your laser; some of the other pieces aid the laser by possessing a reflective surface. When properly aligned with your laser they disintegrate an opponent's piece... when improperly aligned with the laser or opponent's reflective pieces it can disintegrate one of yours... even your laser or king, losing you the game.

When a Hypercube is moved onto another piece, that piece disappears from its original position and reappears on a randomly selected empty square. This is a double-edged sword; it may relocate a piece to a vulnerable position or instead make it possible for the piece to capture an important piece of yours on the next move.

At the center of the board is a Hypersquare. It absorbs laser beams and acts like a stationary Hypercube – any piece moved to it disappears and reappears randomly on an empty square.

Laserchess is a thoughtfully devised game designed for two players only. Hopefully a future update will allow one to pit their abilities against the computer. It is a must for any chess-maniac who wishes a slight diverting novelty to the classic game.

MACALIKES AND MORE

PD not only means that you're free to use the software but it also means that you're free to add onto and modify it as well.

In PD, awaiting the knowledgeable hacker, are many potentially interesting programs and applications in need of modification to make them truly extraordinary.

Perhaps the most interesting which needs a Hacker's expert touch is MACDESKTOP – an alternative operating shell for the GEM desk top which in many ways is turns your ST's icon system into that of an Apple Macintosh. It is available from Softville PD Service – disk #DEM 20.

It looks truly impressive and is in many ways superior to the standard GEM desktop except for one important fact: most of its functions aren't entirely functional yet!

There are also emulators of different computers for the ST which could benefit from a programmer's expertise as well as dozens of applications and programs. More on those next month.

PROGRAMMING

TRUE BASIC

BASICs come and BASICs come and sometimes you wonder if they'll ever stop coming. True BASIC claims a better pedigree than most, however, coming from the keyboards of Kemeny and Kurtz, the originators of the language. Richard Monteiro examines its lineage.

£60.83 ■ ST and Amiga ■ Precision, 6 Park Terrace, Worcester Park, Surrey, KT4 7JZ (01-330 2089)

In the beginning there was only one and it was free. Now there are hundreds, some free and some not. The latest is definitely not free, but is hailed as being The One. What are we on about? BASIC! The creators of BASIC, fed up with all the miscreant BASICs that fail to follow the straight and narrow decided to produce a language that is all things to all programmers. Or something like that. *True BASIC* is the result. It boasts portability, structure, speed and price.

The portability bit doesn't refer to the weight of the package (two 300 page manuals put paid to that), but to the fact that programs can be written on one micro – an Amiga, say – and run on another – an ST, say. Versions of True BASIC exist for Amiga, ST, PC and Apple Mac computers. One language guaranteed to be the same on any micro; an exciting prospect.

Truth dilates

The main editing window takes up the whole screen and like most editing software lets you move freely throughout the file, cutting, copying and pasting, searching and replacing. The most noteworthy feature of the editor is its Mac-like delete function: BASIC lines are highlighted (by clicking and dragging the pointer) and one stab at the Delete key gets rid of the lot. It's a pity this wasn't taken further whereby highlighted text could be replaced simply by typing in fresh text.

Most features are accessed via drop-down menus or keyboard sequences, though some have bizarre names. For instance, 'Unsave' deletes files from a disk and 'Do Unnum' removes line numbers from a listing.

Powerful formatting operations are available from the Alter menu. The Do options are particularly useful, letting you run a preprocessor (formatting program) over your current file, among other things. These Do programs are True BASIC listings which means you can create your own. All manner of things are possible: you could convert programs from other dialects of BASIC, display your BASIC programs using a specific layout, force all variables to upper case and so on. Four Do operations – Format, Num, Unnum, Renum – come as standard.

True BASIC programs are compiled before running – this doesn't mean you can create stand-alone programs (another package is needed for that), but it does mean that routines are reasonably fast. There's also a command window, though, which which accepts BASIC input directly; instructions are executed immediately as is common with interpreted languages.

Most menu options and other house-keeping directives can be executed from the command window, and several commands can be executed in one go simply by separating each with a semi-colon. Longer sequences of instructions can be saved as script (batch) files and executed in one step from the command window.

True blue

True BASIC can handle ridiculously large numbers. The smallest positive number is 5.56268×10^{-309} while the largest positive number is 1.79769×10^{308}. It's unlikely you'll ever write an application which comes close to these limits – it would take more than 10^{29} lifetimes to count to either limit. And, anyway, number accuracy is only guaranteed to 14 digits. Even sillier is the fact that an array can have 255 dimensions. Try creating a 255-dimensional array with bounds greater than one – two, say. That would require 2^{255} bytes of memory (2^{24} is 16Meg)! If such an array were possible, there would be enough room to log all the particles in the universe.

Only one command per line is allowed, shorthand for REM is the exclamation mark (!), LET must be used to assign variables, WHILE WEND loops don't exist (though DO WHILE LOOPs do), '&' concatenates strings, and 'slightly reserved' words exist. Most other features are in line with current versions.

Mathematical functions are present in force: DIVIDE(x,y,q,r) divides x by y and returns the quotient q and remainder r, EPS(x) returns the smallest number that can be added to (or subtracted from) x so that the result

AMIGA AND ST DIFFERENCES

While the layout and general working of True BASIC is the same for both machines, the ST version offers additional BASIC and command-window instructions. For example, INFO displays file and directory information, RENAME does the obvious, DO TRACE keeps tabs on a program's variables, ALIAS organises files and directories.

Additional BASIC syntax includes ASK PIXELS, SET/ASK TEXT JUSTIFY, SET/ASK DIRECTORY, SET/ASK NAME and REDIM.

Also for ST users are OPTION TYPO, LOCAL and OPTION NOLET. OPTION TYPO, which is placed at the beginning of a program, checks the syntax of every variable entered into the listing. An error occurs if a variable is spotted that isn't declared by the LOCAL command. NOLET merely allows you to omit LET statements.

It may sound as though ST users are getting a better deal than Amiga users. Not true. The Amiga User Guide is a larger affair containing much more tutorial. Also supplied with the Amiga package is a keyboard overlay.



BASIC BOOKS

Neither the Reference Manual nor the User Guide will teach you programming. If you want a more gentle introduction to True BASIC try any of the following:

True BASIC – Programs and Subroutines, John Clark Graig, Tab Books, ISBN 0-83061-990-9, £13.20

True BASIC – A Complete Manual, Henry Simpson, Tab Books, ISBN 0-83061-970-4, £11.60

These are available from John Wiley & Sons, Distribution Centre, 1 Oldlands Way, Bognor Regis, West Sussex, PO22 9SA. Phone 0243 779777.

TRUE BOOSTERS

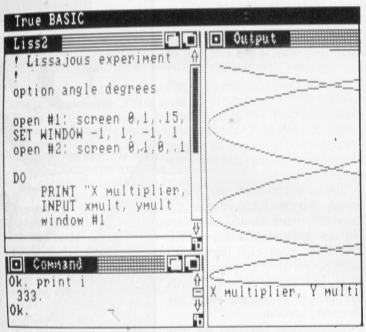
Add £60.83 to the cost of the True BASIC language system and Precision will sell you a package allowing you to create stand-alone True BASIC programs. True BASIC runtime, as it is called, creates executable programs from compiled True BASIC files.

Your True BASIC System disk includes several library files of functions that supplement the core command set. Other libraries on offer from Precision include Developers Toolkit, Sorting and Searching, Advanced String Functions, 3D Graphics, Business Graphics and Scientific Graphics. Each costs £34.74.

differs from x (Dr Stubbly-Tumbler assures us it's useful), MOD(x,y) works out the remainder of x divided by y.

There are plenty of structured commands such as DO..WHILE and DO..UNTIL loops, SELECT..CASE contructs and parameter-passing modules. This allows you to write well formatted programs, though you're still allowed GOTO if you occasionally go cold turkey.

Each point on the graphics screen is assigned x and y co-ordinates, and if you want to draw a graph showing the population increase of burrowing mammals with bodies encased in bony plates and capable of rolling into a ball using True BASIC, you might express the x co-ordinate in years (from 1980 to 1987, say) and the y co-ordinate in thousands of animals. Neither co-ordinate relates to the number of pixels on the screen; True BASIC translates your co-ordinate range into screen co-ordinates automatically, giving a truely portable graphics interface.



■ *True BASIC on the Amiga*

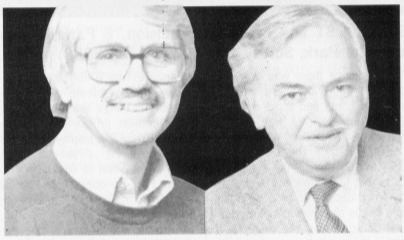
STREET BASICS NO MORE

Back in the days of flower power, flares and free love (heady days – Ed), two men – John Kemeny and Thomas Kurtz – concluded years of work with the introduction of BASIC. As their project was intended simply to aid students at Dartmouth College, Kemeny and Kurtz thought little of their creation and consequently placed it in the public domain.

The duo didn't realise that BASIC was the spark needed to attract thousands of people to computers. BASIC was simple, it used instructions common to the English vocabulary and it was free. Between then and the proposed ANSI (American National Standards Institute) standard, hundreds of dialects of BASIC have been developed for hundreds of machines.

Most BASICs are designed with a particular machine in mind; they allow easy access to the machine's hardware. Thus graphics, colour and sound, which are rarely even similar on two makes of micro, are exploited to the full.

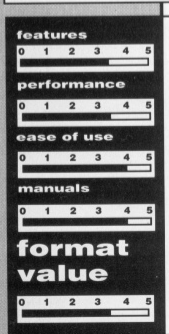
But these BASICs are bad! Or so Kemeny and Kurtz would like us to believe. They are 'Street BASICs': great for single-machine use, but hopeless for transferring to other computers. It's not hard to figure out why the purveyors of True BASIC should wish to discredit other versions which don't offer structured programming, the full features of a particular micro, portability from one computer to another or near-ANSI compatibility; after all, they



True to your roots

The advantage of being able to transfer code from one machine to another without heavy rewrites is obvious. Whether True BASIC can sell enough to make this possible remains to be seen. The system works well for simple programs, but extra modules are necessary for interfacing to GEM or Intuition – a separate package costing as much again as the interpreter is needed to create stand-alone programs.

That said, the manuals, editor and range of commands are excellent. Considering the amount of work the compiler does to ensure the code runs on any of four 16-bit micros, even the execution speed is acceptable. But will it be *the* BASIC for the next generation of home computers? Time will tell.



for

- Healthy-sized manuals
- Transportable code, including graphics
- Handles very large numbers
- Programs can be restarted, even after changing contents of variables

against

- Expensive
- ST User Guide not up to standard of Amiga manual
- Extras required to make the most of the system

BENCHMARK TESTS

The 100,000-loop floating point divisions test shown here may not be the most elegant of benchmarks, but it's a reasonable guide for judging arithmetic speed. The routine actually calculates Pi. The listing is in True BASIC; it runs unmodified on Amiga, ST, Macintosh and PC machines. Simply changing the DO WHILE LOOP to WHILE WEND will allow the routine to run on most other versions of BASIC.

Don't take the results as gospel: different versions of BASICs have different strongpoints. For instance, STOS is excellent for fast screen animation, Power BASIC is particularly well equipped for interfacing to GEM and F-BASIC really does like maths.

```
PRINT time$
LET pp=0
LET i=1
LET sign=4
DO WHILE i<100000
LET pp=pp+sign/i
LET i=i+2
LET sign=-sign
LOOP
PRINT pp
PRINT time$
END
```

AmigaBASIC –	101s
F-BASIC(Amiga) –	15s†
GFA BASIC 2 (ST) –	48s
GFA BASIC 3 (ST) –	31s
GFA 2 compiled (ST) –	18s†
Power BASIC (ST) –	24s†
ST BASIC –	166s
STOS BASIC (ST) –	56s
True BASIC (Amiga) –	50s*§
True BASIC (ST) –	42s§

** True BASIC programs run marginally slower on the Amiga due to the machine's slower processor speed and multi-tasking operating system.*
† Compiled BASIC – others are interpreted.
§ Produces intermediate compiled code before executing a program.

FERNANDEZ MUST DIE

In the distant jungles of Central America, revolution is in the air. The government of the Democratic Republic of El Diablo has been brutally overthrown and the evil despot known only as Fernandez rules the land.

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Atari ST screen shots shown

Spectrum disk: **£12.99**
Spectrum cassette: **£8.99**
Commodore disk: **£12.99**
Commodore cassette: **£9.99**
Amstrad disk: **£12.99**
Amstrad cassette: **£9.99**
ST: **£24.99**
Amiga: **£24.99**

image works

Image Works, Headway House, 66-73 Shoe Lane, **London** EC4P 4AB. **Telephone:** 01-377 4645

MUSIC

K-MINSTREL 2

If you're trying out music on your ST for the first time you'll not want to spend a huge amount on software before you've got a feel for the subject. Chris Jenkins examines an entry-level music processor from Kuma.

K-MINSTREL 2

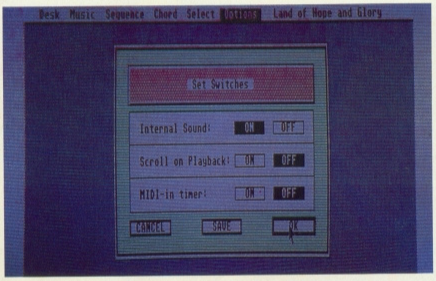
£29.95 ■ ST only, all models

Kuma ■ 12 Horseshoe Park, Pangbourne, Berkshire RG8 7JW (07357 4335)

Not everyone wants to turn an interest in electronic music into an all-consuming passion, yet much of the ST music software on the market is aimed squarely at semi-professionals with stacks of MIDI equipment, and plenty of spare cash to spend on complex sequencing and editing software. There's definitely a space at the lower end of the market for the dabbler with very little MIDI equipment, or even none at all, who wants to use his ST for music without spending a packet.



■ *Composing and editing on-screen*



■ *The options menu gives you access to MIDI equipment*

Kuma's *K-Minstrel* was one of the first UK-developed pieces of software to make use of the ST's MIDI facilities. Now it's been revised and updated, and the resulting package, unsurprisingly entitled *K-Minstrel 2*, serves as an even better low-cost introduction to both conventional music and MIDI. As you'll see, though, there are some strange omissions which may make you think twice before adding it to your collection of music software.

Conventions

K-Minstrel 2 works in hi-res mono or medium-res colour modes, on a standard 520ST. It's fully GEM-based, using the familiar pull-down menus, mouse pointers and windows. The single unprotected disk comes with a ring-bound 30-page manual, and owners of K-Minstrel can upgrade to K-Minstrel 2 for £10. It's also possible to transfer music data files from the original version of the program.

There's only one main display screen in the program. This shows a conventional music stave, with both bass and treble clefs. At the top of the screen are a series of pull-down menus; at the bottom, a series of

PRETTY POLY

To create polyphonic chords you need to combine several monophonic notes on different Minstrel channels. With 4 Minstrel channels you can create chords of 4 notes, for example. Don't plan on writing any symphonies though – with the limitations described in the main text you're limited to a maximum of 50 pages of 16-note polyphonic music.

MIDI FEATURES

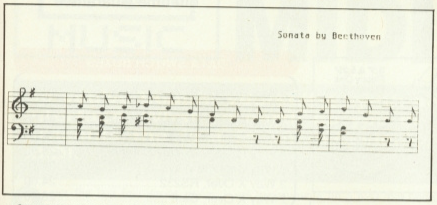
Composing pieces to send to a MIDI instrument can be carried out in two ways. With the MIDI timer off, each note you press has the same preselected time value, so you are really only entering the pitch. With the MIDI timer on, you are in effect recording in real time, with the length of the key depression determining the time value of the note. You can record on any Minstrel channel, though you'll be dismayed to find that K-Minstrel 2 can't cope with chords through MIDI; it only recognises the highest note played. If you want to use chords, you have to go back to the start and add another Minstrel channel, harmonising with the first one.

You can drop in and out of MIDI IN mode in the middle of a piece (though goodness knows why you'd want to) and you can edit your MIDIed piece afterwards using the mouse. To replay your composition over MIDI, each Minstrel channel can be assigned a MIDI channel and patch preset number. Then it's just a matter of choosing whether to have the internal voices switched on or off, and selecting PLAY to hear your piece.

The most ridiculous omission in K-Minstrel is the lack of any MIDI synchronisation facilities. You can't make it clock an external MIDI device, nor can it be clocked from any MIDI equipment. This means that if you do decide to invest in a little more MIDI gear, specifically a drum machine, K-Minstrel 2 goes straight out of the window.

note icons and indicators.

K-Minstrel 2 can be used for on-screen composition with the mouse, or in real- or step-time with a MIDI keyboard. Music can be played using either the ST's built-in sound chip, obviously limited by its hardware to four simultaneous voices, or using external MIDI equipment. The number breve. You can add triplets and dots to alter the length, and build up chords by combining several individual notes. When editing, you can delete either individual notes or complete chords, or change the pitch of a note or chord simply by moving the notes. It's also possible to add new chords in the middle of a piece, after opening



■ *Completed staves can be printed out to an Epson-compatible printer. This one is courtesy of reader L.V. Beethoven of Germany.*

of pages of music which you can compose depends on the number of 'channels' you wish to have. You can choose 4, 8, 12 or 16 'Minstrel channels', which are not the same as MIDI channels. The number of pages of music available drops from 200 to 50 depending on the number of channels – and unlike some professional MIDI sequencers, which have up to 64 polyphonic channels, K-Minstrel 2's channels are monophonic, each capable of playing only one note at a time.

The preselector boxes at the bottom of the screen allow you to select notes and rest lengths, and such factors as accidentals, rests, slurs and tempo. If some of these musical terms mean nothing to you, don't expect any help from the manual; it assumes a depth of musical knowledge normally limited to serious music students. Bad thinking, guys.

Editing

At the far left is the edit box, in which appears a note of the current value. You can change value by clicking on a different note icon. Also available are accelerando marks (which increase the tempo of the piece by four units), decelerando (the opposite), bar lines (purely for tidiness), crescendo marks (which increase the playing volume by one unit), decrescendo marks (the opposite), and slur lines, which combine the lengths of two separate notes. Bear in mind that slur lines have no effect on notes of different pitch transmitted via MIDI.

Also available are a number of different rest values, sharps and flats, and reversed note stems. A scrolling pad in the middle of the display allows you to move the bar lines up or down to fit in values of almost the whole MIDI range, C0-C8.

There are six note lengths available, from demisemiquaver to semi-

up a space using the Insert option.

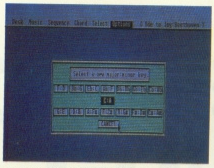
In the centre of the scrolling pad is the current page number of the composition, while the channel box to its right gives the current Minstrel channel number. To the far right is the tempo box, giving the speed of the piece in tempo notes per minute (so the speed depends on both the basic tempo note chosen, and the tempo itself).

Getting it down

Composition is simple; when you have the note you require displayed in the edit box, copy it onto the stave by clicking at the appropriate position. The drop-down menus let you play the whole composition from the start, or mark the start and end points of a shorter sequence and play that section alone. Marked sequences can be copied and inserted into the manuscript, deleted, or moved to a new position. You can also save a marked sequence rather than a whole piece, or merge a saved piece into any position after a marked point.

The 'Select' menu allows you to edit the parameters for each separate Minstrel channel. Volume can be varied from 1 to 15, affecting both the internal sound and transmitted MIDI key velocity data. Each Minstrel channel can be assigned a MIDI channel number (up to four Minstrel channels per MIDI channel – confusing, isn't it?). Each can also be assigned a Preset number, which will select the appropriate patch on your external synthesizer.

The attack, decay and sustain settings of the ST sound chip's four channels can be changed to give some variety to the internal sounds, but this will of course not affect any external synth. Under the 'Options' menu, the Channel Data window lets you call up all the settings for any of the four Minstrel channels, and amend



■ *You can transpose the key of a piece, among other goodies.*

the data in the window. This includes the colour for the notes on each channel, although only four different colours are available.

Also under Options, you can change the key of the piece at the end of any page (not in the middle), change the name of the piece, transpose it into another key, switch a metronome click on or off, or print out any page using a 100% Epson compatible printer. The Set Switches options let you toggle the internal sound, playback scrolling, and MIDI IN timer.

Key package?

Though K-Minstrel 2 has many good points, its price being the main one, there's public domain software about which serves better as a MIDI sequencer, and programs such as Music Construction Set from Electronic Arts which offer better facilities for internal sound synthesis. MCS also offers a block-composition system which requires no knowledge of musical theory, unlike K-Minstrel 2 which seems to assume that everyone interested in music must be a music student.

K-Minstrel 2 is pitched at a good price, and if you're prepared to put a bit of hard work into your compositions you'll get on well enough, particularly if you only want to use it for stand-alone ST compositions. A bargain then, but, if you intend to interface with MIDI instruments, one with some inconvenient limitations.

for

- One of the least expensive music packages
- Can be used with or without MIDI equipment
- Easy to use and fairly powerful

against

- Limited note storage capacity
- No MIDI synchronisation
- No real-time MIDI chord recording

features 0 1 2 3 4 5

performance 0 1 2 3 4 5

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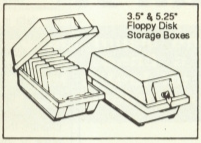
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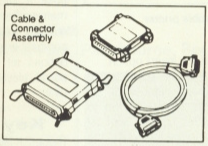
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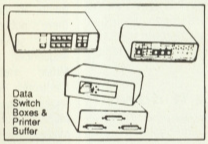
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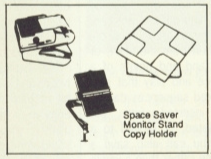
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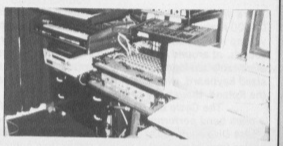
So you've bought yourself a synth and you've got a MIDI interface. What on earth do you do next? Chris Jenkins presents the first in an occasional series on practical MIDI.

Over the last few issues we've introduced the theories behind computer music, and explained something of the concepts of MIDI and the arcane arts of sequencing, synthesiser patch editing, sampling and recording.

This month it's time to look at some of the hard practical details of setting up a working music studio based around your ST or Amiga. With careful planning you can make a start for around £400, and keep expanding the system as you have the time, space, and money. Let's assume for a start that you have an ST or Amiga – otherwise you wouldn't be reading the magazine. For ST users, who already have MIDI ports built into their machine, the first thing you might consider is a memory expansion. Some professional music software packages, such as Steinberg *Pro 24* v3, need 1 Meg to operate. Others will happily work on a 520, but benefit from the extra music data storage space offered by a 1040. Consider the options of trading in your 520, or expanding its memory using one of the many RAM kits available.

Computer World

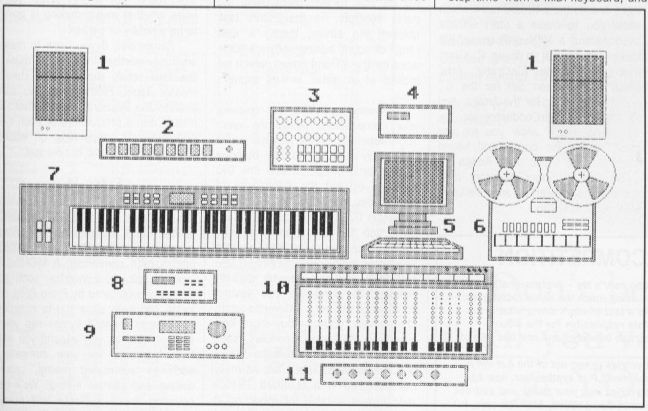
For Amiga owners, the first necessity is a MIDI interface. Though MIDI software is becoming easier to find, notably through Dr T distributors *MCMXCIX* (1999 if you skipped Latin at school), you will have to make sure that the package you want to use is compatible with the interface you choose. Probably the best buy at the moment is the Datel *MIDI Master*, at £34.99. This is available in different versions for the A500, 1000 and 2000, and is compatible with a wide range of music packages including Electronic Arts' *Deluxe Music*. It has a MIDI IN socket, MIDI THRU and three MIDI OUTs – we'll explain the value of multiple OUTs later on.



■ *You too can have a front room like this, if you aren't careful.*

OK, so you're set up to communicate with MIDI equipment. Now you want your MIDI music composition software.

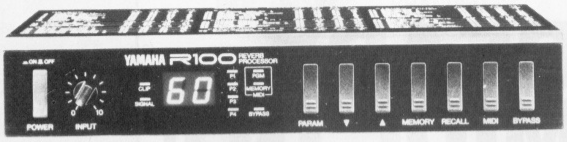
There's a baffling range of music sequencing software available, but most packages have the same basic functions; to record in MIDI data form a sequence of notes or chords played in 'real time', or entered separately in 'step time' from a MIDI keyboard, and



■ *A schematic of a full MIDI setup. 1 – Monitor speakers; 2 – MIDI switching interface; 3- MIDI drum machines; 4 – Tape-to-MIDI synchroniser; 5 – Computer; 6 – Eight-track recorder; 7 – Keyboardless MIDI synth module; 9 – Keyboardless MIDI sampler module; 10 – Multi-channel mixer; 11 – MIDI digital effects units.*

DIY MIDI

Amiga owners jealous of the ST's 'free' inbuilt MIDI interface need wait only a little longer. Even as you read this the Format boffins are working away behind the scenes – we'll shortly be publishing an article on how to build your own Amiga MIDI interface, saving you a few pounds on shop prices. Watch this space.



■ *Yamaha R100 MIDI-controlled 'reverb' unit. You get 60 preset reverb effects, for around £200.*

to allow you to edit, transpose, chain, loop and replay the data to produce a complex and professional-sounding composition.

THE CRACKDOWN

There are several traditional first-choice keyboards. The Yamaha DX100 features four octaves of miniature keys, pitch bend and vibrato wheels, and 256 editable digital Frequency Modulation sounds, at around £199. Roland's Alpha Juno 1 has more traditional editable analogue synthesiser sounds, with a four-octave full-sized keyboard, while the Korg Poly 800 MkII has a similar spec to the Roland, though the sounds are a little inferior.

The Casio CZ-101 features four octaves of miniature keys, a pitch bend performance wheel, 32 editable sounds, and powerful Phase Distortion sound synthesis at around £199. If you're happy to use uneditable preset sounds rather than bother programming your own, you can try the Casio CZ-230S, with 99 of the same kind of Phase Distortion sounds, built-in speakers and a drum machine.

Several points to note about these keyboards; firstly, they're all no longer being manufactured, although they're still easily available second-hand or at reduced prices from music dealers. Unless you're a professional musician, second-hand or discontinued equipment is a much better buy than the latest, most expensive gear. Secondly, none have velocity- or pressure-sensitive keyboards (allowing you to play louder by hitting the keys harder, or to introduce effects such as vibrato by wiggling the keys). For effects like those you'll have to move closer to the £500-£900 market, looking at new keyboards such as the Kawai K1, Yamaha DX11 or Roland D10.



There are several excellent packages around the £40-£50 mark which allow you to make a start without even owning a MIDI synthesiser. We looked at several in Issue 2. Good examples include Electronic Arts' *Music Construction Set* for the ST and *Instant Music* for the Amiga, and Microdeal's *SuperConductor* for the ST. All of these allow you to play music using the computers' sound chips (Instant Music uses Amiga IFF sample files). SuperConductor is a surprisingly powerful and versatile MIDI sequencer too.

MINI MIDI COMPETITION

Electronic music isn't just a home user's toy – professional musicians put their albums together using much the same techniques, albeit on more expensive kit. As a test of who's doing what in the field, can you name the six artists responsible for the albums whose titles form the five paragraph headings and one box title of this article?

The first three correct entries drawn out of the hat win a copy of the AMP Records compilation LP of synthesizer, new age and ambient music. Send your entries with your name and address on a postcard to:* ST/Amiga Format Competition, AMP Records, PO Box 387, London N22 6SF. *Closing date is October 31st.

Into Battle

Possibly the biggest choice involved in setting up a MIDI studio is your first instrument. You'll have to choose a keyboard. After that, if you want to increase the number of instruments you can save money by choosing keyboardless modules, since you've already got one keyboard with which to enter the notes to your MIDI system.

OK, you have your computer, software, and first synth. Linking everything up using 5-pin DIN/5 pin DIN MIDI cables is straightforward – it's best to buy the real thing rather than cheaper audio equivalents. Unless you have a Casio CZ-230S, or any other MIDI keyboard with built-in amplifier and speakers, you'll need to link up the audio output of the synth to your hi-fi AUX IN sockets, or buy a cheap combination amp/speaker (a 'combo', about £50 for a basic model), to hear your musical creations.

Organisation

You'll soon tire of the preset sounds on your synth, but in most cases you will be able to edit them using the panel controls. To make this task quicker and easier, there's a vast range of sound editing software packages for the ST and Amiga, which we looked at in detail in last month's issue.

Sequencing, editing and replaying your compositions using one synth soon becomes boring (unless you're exclusively interested in, say, baroque harpsichord music!). There are two ways to expand the complexity of your pieces. Multi-timbral synths, like the Casio CZ-101 and Yamaha DX11, allow you to play more than one sound at the same time (either from a sequencer sending messages on several MIDI channels, or by digitally 'splitting' the keyboard into several zones each playing a different sound). Alternatively, you can buy more keyboardless MIDI synth modules, such as the Roland D-110, Yamaha TX81Z or Cheetah MS6. These are normally manufactured in a standard 19-inch wide format suitable for mounting in studio equipment racks. Practically every MIDI synth now has a modular equivalent (which is obviously a lot cheaper). By setting each module to respond to different MIDI channels, you can use a sequencer to play a complete multi-sound composition. Once you have more than one synth, you will begin to appreciate the advantages of having a MIDI interface with multiple outputs (or a splitter box such as those manufactured by Akai or Philip Rees) – otherwise you would spend hours unplugging and reconnecting different MIDI leads.

Whether you have one synth or more, for the best results you will have to get into multi-track tape recording. Before you throw up your hands in horror at the prospect of such an expensive and complex process, bear in mind that as with the synth market, there are great bargains to be had second-hand

The Plan

The normal procedure for recording is to plan out in advance exactly what you're going to record (pretty easy if it's all done on a sequencer), then set up the sounds using the equalisation, level controls and effects units on the audio mixer. Record the rhythm tracks (drums and bass) first, then, while listening to the recorded tracks on your speakers or headphones, lay down your chords and melodies on the remaining tracks. You'll realise that on a four-track system this doesn't leave any tracks for vocals or harmonies. There are two solutions; either learn the esoteric art of 'ping-ponging' (rerecording three recorded tracks simultaneously onto the fourth, then erasing the originals allowing the tracks to be used again); or buy an eight-track tape recorder (or sixteen-track or twenty-four track...) By the time you've got to this stage, you'll know whether music making is going to be a hobby or career!

Remember, if you hope to make anything worthwhile of your music, the final result should be a stereo master tape. From there you can explore the industries of commercial music, demo production, or even the pop business, depending on where you want your music to take you.

Dig It

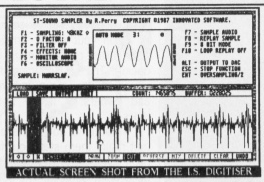
MIDI equipment now comes in many exotic forms, such as MIDI guitars, drums, wind instruments and even microphones (the Digigram MIDIMIC pitch-to-MIDI convertor). A MIDI-to-CV (control voltage) convertor, such as those manufactured by Philip Rees or Vesta, will even allow you to incorporate cheap pre-MIDI synths into your system, and as you expand you will find new uses for your computer, such as automated mixing, score writing and sample editing. We'll be covering these subjects and many others in future issues – meanwhile, if you have any queries on computer music, drop us a line.

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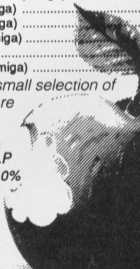
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■ *Images of this quality and better are quite attainable on an Amiga or ST. A video digitiser, a video recorder or video camera, and a good subject are all that's required. This particular shot, captured with Digi-View, demonstrates the Amiga's HAM mode. Sheer sophistication.*

Doubtless you've seen graphics on your ST or Amiga that no artist could ever dream of producing. The sort of thing that leaves you with your tongue hanging out, and owners of lesser machines in tears.

What is it about these graphics that make them stand out from other pixel portraits? Try life-like, sexy, believable, detailed. The sort of thing that just isn't possible with an art package, no matter how large the colour palette.

These near-photograph quality images are only possible by grabbing a picture, inanimate object or live subject and reproducing it on a computer's screen. The hardware which does this is the video digitiser and the resulting pictures are known as digitised images. There is nothing mysterious about the way this is done: a video camera or video recorder sends signals to the digitiser, which assigns colours or shades of grey to each picture element (pixel) that eventually appears on the computer's screen.

Of course, once an image has been captured and transferred to the computer's memory, it can be manipulated like any other graphic. You can take the image and enhance it by removing unwanted background, touch up bits that didn't come out as you wanted and alter the picture's colour palette. And then what? How about using the pictures for producing startling demonstrations (like *Half Brite Hill* on the Amiga or *Revolving Dolls* on the ST), forming the basis of comical sprites for games, the backgrounds (scenery) for games and adventures – in fact, for anything that requires graphic impact.

So what are you waiting for? Read on to find out what you need for your particular setup, which digitisers are available, the software to enhance and disfigure grabbed images, and techniques for getting the best results.

DIGI-VIEW 3.0

Amiga only (512k min, 1Mb recommended) ■ All screen modes supported ■ £130 ■ HB Marketing (0895 444433)

If there's one product available for the Amiga that every Amiga owner has at least heard of, it must surely be Digi-View. Digi-View has been available for a couple of years and during that time has become one of the most successful add-ons for the machine. The manufacturer, NewTek in the States, claim to have sold units to users in nearly every country including the Soviet Union.

The first thing that strikes you when opening the Digi-View box is the

GRAPHICS

DIGI-TIGERS

Jealous of those sparkling screens you see on STs and Amigas in shop displays? Video digitisers aren't just a new way of taking photos – they open up a whole new world in image processing. Richard Monteiro and Jason Holborn polish their pixels in search of the ultimate.

size of the digitiser – to describe it as small would be an overstatement! Digi-View plugs neatly into the parallel port of the A1000 but you'll need the Digi-View adaptor available for an extra £19.95 to be able to use it on either an A500 or an A2000. The actual video signal is fed into DigiView via a standard phono socket on the front of the box.

The Digi-View software comes in two versions on a single disk: an American NTSC version and a PAL version. To be able to use the PAL version you'll need at least 1 Megabyte and even then available memory can get a little tight. Digi-View supports all the Amiga's graphics modes and can produce from two to 4096 colours.

Version 3.0 of DigiView incorporates several new features over it's predecessors, such as overscan support, extra half brite (yes, it is spelt like that) and a line art mode. All three are fairly new to Amiga users, as most art packages offer little if any support for them.

Enclosed with the Digi-View unit is a perspex wheel segmented in four different colours (red, green, blue and clear) which is attached to your video camera and used to capture colour pictures. To capture a grey scale picture, Digi-View requires only one scan of an image. Colour grabbing involves taking three different exposures using the red, green and blue filters. Digi-View then builds the three exposures into a colour picture, holding them all in memory at once. This is why it requires so much memory.

The software includes a limited number of image processing facilities such as changing the saturation level, brightness and sharpness of an image. Using these functions can sometimes have disastrous effects but thankfully the software includes every user's friend, Undo. The software also supports printing but in practice this is not very practical as it's not possible to connect a parallel printer at the same time as Digi-View.

Overall quality of captured images ranges from extremely impressive to unrecognisable, but with a little tweeking most grabbed images can be made to look very good. The only negative thing about Digi-View is the amount of time it takes to grab an image. Grey scales images can take around 10 seconds while a colour image, requiring three scans, can take as long as 30!

features	4.0
performance	4.0
ease of use	3.5
documentation	3.0
format value	4.0

SCREEN MODES

So you've never heard of Overscan or the even more elusive Extra Half Brite mode? Well it's not entirely surprising as the majority of Amiga software ignores them completely. Overscan is a very handy facility whereby the entire screen is used, rather than a small window in the centre. Extra Half Brite is an Amiga-specific mode that allows for the theoretical doubling of a screen's colour palette. In practice, the extra colours available are only darker copies of the lower half of the palette.



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ST World USA (July 1988)

"Is one of the most complete assembler packages available. The documentation is of a very high standard and this is complemented by Metacomco's consistently good user support"

ST World UK (December 1987)

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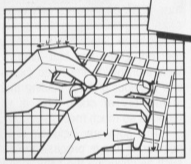
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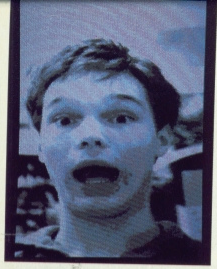
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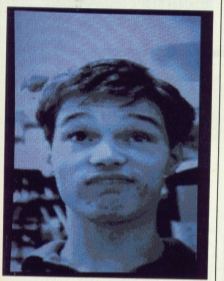
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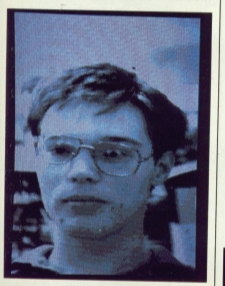
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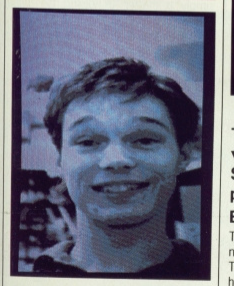
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■ *That's Jason 'Bet I can pull more silly faces than you' Holborn having a quick gurn. Nothing special was used (except a couple of suppositories for his nostrils – Ed). We just sat him in front of a very old black and white video camera and chose the blue palette. Software and hardware did the rest.*

DIGIPIC

Amiga (512k min) ■ Low res only, 32 colours ■ £299 ■ Precision Software (01 330 7166)

DigiPic is a relatively new arrival on the Amiga digitising scene that boasts an impressive specification. While DigiPic doesn't support fancy features such as Overscan, Extra Half Brite and HAM, in terms of speed of operation it leaves Digi-View standing.

Included with the digitiser is a separate piece of hardware with the rather grand name of *Extended Grey Scale Adaptor*. This little wonder is connected between the Amiga and its monitor (or modulator) and doubles the number of grey shades available. The only snag is that the EGSA hardware must be present before an extended grey scale image can be displayed. DigiPic supports full colour digitising using the same three exposure method as Digi-View and a similar colour wheel.

Any item of hardware is only as good as the software that drives it, and DigiPic's software is robust. Both Digi-View and DigiPic use standard Intuition pull-down menus to access all digitising functions, leaving the main screen uncluttered.

With Digi-View, the image processing tools are rather limited, but DigiPic's are much more comprehensive, with a list including Quantise, Contrast, Threshold and Edge. The overall quality of grabbed images aren't really of the standard that one would expect from a digitiser costing £300, but if you require a fast converter then DigiPic is worth investigating.

features	3.5
performance	3.5
ease of use	4.0
documentation	4.5
format value	3.0

TURBO DIZER v2.0

ST ■ Low and high res supported ■ £149 ■ Software Express (021-328 3585)

Turbo Dizer certainly isn't new, and now proudly proclaims a Ver 2.0 tag. The 2 refers to the software, not the hardware (which still comprises a long thin interface for plugging into the ST cartridge port). A BNC-video male socket is the digitiser's only distinguishing feature, and the only way of hooking it to the real world.

You connects yer lead and takes yer source choice; either PAL-standard video recorder, video camera or TV with video-out socket. There are very few televisions with video-out so make sure you have another acceptable video source before buying this, or indeed any digitising, product.

The software is responsible for deciphering the image the camera sees, or the video recorder outputs, and displaying it on your ST's screen. Colour is translated to grey-scales which means the image on your ST screen can look garish when viewed in low resolution. From the main menu you can set the greyscale level (2, 4, 8, 16), toggle dithering on or off (to refine grabbed pictures), alter brightness and contrast levels, select colour settings, load or save images, determine picture format (NeoChrome, Degas, Art Director and so on), enter an animation section or commence digitising.

Not all functions are available for both high and low resolution digitising. For instance, colour is non-existent in high-res (just inverse and normal), animation is only possible in low res and only high-res pictures can be saved with an IMG extension for inclusion in DTP packages like Fleet Street Publisher.

The time taken to digitise a picture is proportional to the number of grey scales used. For every grey-scale add 0.025 of a second to the digitising time. At least, that's what the manual says. Going by these figures, it should take 0.2 of a second to grab a frame using eight grey-scales. Wrong. Such a picture actually



■ *What's this? Members of Amstrad Action and ACE invading the Format offices.*

TURBO DIZER FACTS

■ A demo, showing what the animation section is capable of, is available from Software Express (021-328 3585) for £4.95.

■ The digitiser is used by Vets and the British Museum.

■ Education establishments in Shropshire and East Anglia have approved the digitiser for use in schools.

■ The picture-slideshow program uses a text file to keep information on how images are displayed on screen.

FORTHCOMING ATTRACTIONS – AMIGA

There's a lot happening on the Amiga video digitising front and details of several impressive-sounding new-comers are appearing. Probably the most interesting new digitisers are the long awaited LIVE! unit and NewTek's GenLock/Effects/Video Digitiser combination unit with the rather obscure name of 'Video Toaster'.

LIVE!, which is already available in the US, was originally destined to be a Commodore product but for reasons unknown was dropped by Commodore. LIVE! has similar facilities to Digi-View but it's main claim to fame is that it operates in real-time. Unlike most video digitisers, LIVE! is a true colour digitiser which means that it doesn't require colour filters like those used with DigiPic or Digi-View. LIVE! achieves this by actually decoding a video signal's colour information and using it to reproduce colours within the resulting image. The PAL version is still under development in the States, but should be available in this country sometime in the autumn.

Video Toaster, from NewTek, is best described as a complete Video Mixing Desk which is gonna knock yer socks off!. Toaster combines an industrial standard genlock, full video effects system and a real-time video digitiser in one package, with a host of other add-ons such as dedicated video co-processors etc. The Digitiser included in the Toaster package even puts LIVE! to shame when it comes to speed of digitising. NewTek claim it can digitise in TRUE real-time (50/60 frames a second). Video Toaster has been demonstrated at several major Amiga events including the recent Ami-Expo in Chicago, but even these demo systems are still only beta versions of the final product.

As with all things, power doesn't come without a price (sorry Atari) and it seems certain that the Video Toaster undoubtedly won't be cheap. If you're a video professional, though, Video Toaster could be the answer to your dreams.

For further information contact either Amiga Centre Scotland on 031 557 4242 or HB MARKETING on 0895 444433.

takes between 1 and 2 seconds. Still, the manual *could* have a printing error.

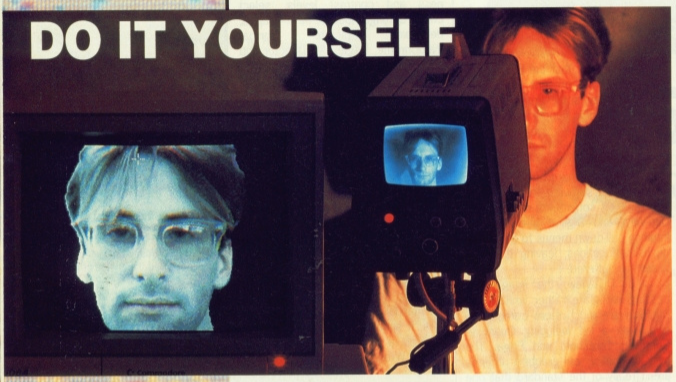
Pictures take up a lot of room – typically 32k – which is why Turbo Dizer uses a compression technique for storing animation sequences. Rather than storing the full picture, the software simply stores the differences between each frame or picture. This can mean a 75% reduction in memory used.

Control over animation is good, but tricky to implement. Sequences can be grabbed individually or automatically; the time between each shot being taken (in auto mode) can vary from seconds to 48 days. Animations can be played from within the package, but sadly the software doesn't allow you to create stand-alone sequences.

Documentation is poor, the C source files that exist on the disk contain German comments (and the briefest of mentions in the manual), digitising is slow and thus works best with stills. Moans apart, with a little fiddling good results are possible. Pictures can be converted from one format to another easily and the price is agreeable.

features	3.0
performance	3.5
ease of use	3.5
documentation	2.5
format value	4.0

DO IT YOURSELF



REAL-TIME?

What is a *real-time* digitiser? In theory any video digitiser that claims to be real-time should capture and digitise at a rate of at least 50 frames a second, as a PAL video screen is updated at this frequency (60 frames per second in the American NTSC standard). But just to confuse matters, some suppliers argue that the definition is that real-time images must appear as smooth animation to the human eye. This can be achieved at much lower frame rates.

If you've got the choice, always use a black and white video camera for grabbing images: they have a higher resolution than their colour counterparts. Most digitising hardware doesn't require a colour camera to grab colour pictures, monochrome cameras are much cheaper.

The best images are always taken from still subjects. If your video is up to it, pause the picture before grabbing. With camera work, you must ensure the subject is well lit; shine as many lights in the general direction as possible. For professional work use three or four spot lights. Matt photographs and pictures don't digitise well. Use glossy pictures for the best results.

Once you've grabbed a few images using your digitiser you'll probably start wondering what you can actually do with them. Unfortunately digitising software often lacks facilities for tidying up pictures or modifying them in any way; the most you're likely to get is a slideshow utility. What you need is an art package of sorts – and there are many – to clean up the image (remove stray pixels, perhaps tweak the contrast or even change the colour palette) and tailor it to your requirements.

Changing the palette is not as outrageous as it sounds. If you're creating a game set on an alien world you'll want the background in unusual colours – red sky and various shades of orange for the countryside (*Sounds like home – Ed*). Experiment.

Look out for graphic packages that offer image stretching, shrinking and twisting. You won't always want to use pictures the size that you grabbed them; having the ability to change their height and width is essential. Don't increase picture size if possible as the results will be awful – pixel stepping starts and looks really ugly. Reducing an image has the opposite effect; it often enhances the picture. Most art packages come with horizontal and vertical flip which are ideal for creating objects out of half an object. For instance, if you digitise a disk and part of it looks odd, it is easy to copy the good half and flip it along the appropriate axis. Then it's simply a matter of joining the two halves.

Once you've got a clean image you'll want to do something with it.



■ *It seemed impossible, but with a little help from Digi-View, Photon Paint and a 1 Meg Amiga we did it.*

OTHER DIGITISERS FOR THE ST

Silicon Animation Machine (SAM) from Start Systems, available on 0304 369364, is the only other video digitiser still sold in this country (HB's Pro 87 and Realtizer having long gone). SAM was going to be reviewed in this feature but didn't arrive in time. Still, here is what Start claim it does:

SAM's great claim to fame is not its price – £249.95 – but its ability to grab pictures from video recorder or video camera in real-time. Basically this means you can snatch any frame and it will appear on your ST screen blur-free and crisp. Only 16-colour low resolution pictures can be snatched though.

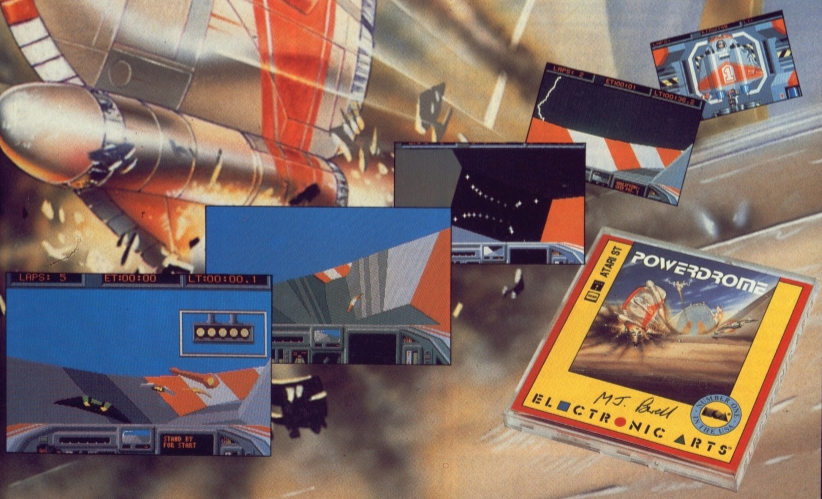
Instead of saving one individual frame of incoming video signal, you can save entire sequences. Ten on a 520, 24 on a 1040, 52 on a 2Meg ST and 108 on a 4Meg ST.

The software allows you to animate digitised sequences at any speed, forward or backwards, and in bounce mode.

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■ *These pictures were captured using Digi-View in low resolution with 4096 colours. Using a picture with such a high colour resolution can restrict you in the choice of available art packages as most only operate in non-HAM modes.*

THANKS

We at Format would like to express our gratitude to **Joe Benzing** at **Axa Graphix** for the use of his digitised work in this month's *Format*. Joe can be contacted on (0279) 730020.

CAMERAS

With all these digitisers, you still need to shell out on a video camera to make them useful. You really need a dedicated black and white camera, since Turbo Dizer is mono only, and DigiView and DigiPic both create colours by combining mono images.

A good buy is the Panasonic WV1410, or if you're feeling rich the NWV1500 which has a better lens. These claim to have a 'Pixel butting' technique which smoothes the input picture for you.

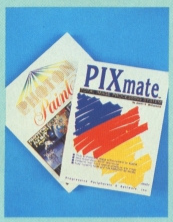
Prices vary from dealer to dealer, but rrp inc VAT are £205 for the WV1410, £270 for the WV1500.

One of the most widely used applications for digitised images is for producing graphics for games. Save sprites and small images as brushes if the art package has such a facility. The memory savings are immense. Backgrounds should always be saved in compacted form (not possible with all art packages); this can knock file size down by half.

Getting the data read by your program isn't all that problematic. The Amiga's standard IFF file format means that any image will load into your program – regardless of what it is written in. With STs the problem is a little trickier, however, most languages have facilities for loading pictures from the more popular graphics packages.

The easiest way to admire you digitised work is to ensure you save all images in a standard format and use a slideshow program to recall them automatically. There are hundreds of things you can do with a digitised image. It's all down to your own imagination.

CLEANING UP WITH THE AMIGA

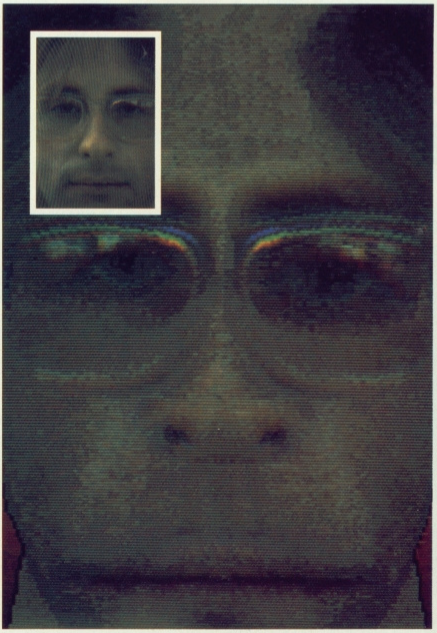


If you need true image processing power, probably the most popular heavy weight package is PIXmate which is distributed in this country by Precision Software. PIXmate uses algorithms originally developed by NASA for enhancing pictures received from space probes such as Voyager 1. The vast distances that signals from these probes have to cross means that the strength of any signal is inevitable weakened.

PIXmate uses the power of the Amiga's Blitter to speed up graphic processing by a factor of ten over conventional image processing programs. It uses a system called Hyper-Slicing. PIXmate includes over 3000 different image processing effects all of which are accessed through a standard Intuition based environment.

Effects include adjusting colour bias, colour extraction, Pixel Averaging, Local Contrast Enhancement, Median Filter, Pixel Randomising, Threshold adjustment, Laplacian correlation, Histographic equalising and the list continues.

Probably the best all-round art package available for the Amiga is Photon Paint from Activision. We reviewed Photon Paint in issue one and ever since it has been a favourite of the Format team. The most powerful facilities within Photon Paint are it's brush manipulation functions. Using these functions you can produce some unusual effects by picking up areas of the screen, stretching, shrinking and twisting to your hearts delight and then pasting the brush back down onto the image.



■ *The task, to turn the hideous features of Format's Art Editor Gordon Druce into a presentable face. Using a separate screen, the right-hand side of the victim's face is pasted down, flipped, and pasted down again. The mouth is stretched and Gordon's locks of hair are reduced to mere tufts.*

ST PARTY TRICKS



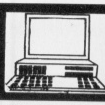
Degas Elite, distributed by Electronic Arts, or NeoChrome from Atari are recommended for tidying up digitised images. They have a good range of cut, copy and stretch routines to play with. NeoChrome is restrictive as it only works with 16-colour low-res images, but it is very easy to use. Degas works in any resolution and as such is perfect for detailed 640 by 400 work.

Electric's Spectrum 512 is ideal if all you want to do is show off your digitised pictures. Standard 16 colour images can be loaded and converted to stunning 512 colour efforts. Spectrum's editing features leave a lot to be desired and you may need to do your chopping and changing in another package.

CONTACTS

PRECISION SOFTWARE – *Park Terrace, Worcester Park, Surrey, KT4 752 (01-330 7166)*
ACTIVISION – *23 Pond Street, Hampstead, London, NW3 2PN (01-431 1101)*
ELECTRIC SOFTWARE – *8 Green Street, Willingham, Cambridge, CB4 5JA (0954 61258)*
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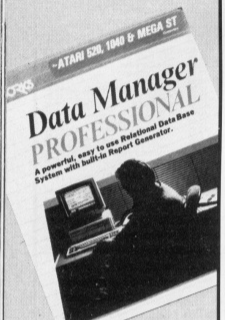
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REVIEW

DATA MANAGER PROFESSIONAL

Ron Massey wrestles with fields and records to form an opinion of the new ST database release from Timeworks.



£69.95 ■ ST only, all models ■ Timeworks /Electric Distribution, 8 Green Street, Willingham, Cambridge CB4 5JA (0954 80318)

Every facet of daily living, both personal and professional, has a legitimate use for a filing system of some kind for efficient management of daily affairs. Yet of the many database systems available, few are what the average user would consider user-friendly. Even more so, very few systems encourage users to find 'extra' applications for them – until now.

Timeworks', latest release, *Data Manager Professional* (let's call it 'DMP') is big brother to their *Data Manager ST*, and should go a long way towards overcoming user reluctance to finding useful applications for efficient management of all information.

Open the box?

DMP is a full-feature professional-grade data management tool which can be used with the ST's GEM pull-down menus, or for the majority of its options, directly from the keyboard.

Once you have made the recommended working copies of your master disks and got going, you will notice that DMP is designed around individual program modules, namely:

DEFINE – For designing new record forms and editing or adding variables to existing records.

MAINTAIN – DMP's operational module. Records are viewed, inserted, edited or modified with this.

REPORT – Used for designing the format of your output files, setting up the parameters for merging blocks of text with definable details from your records.

CONFIGURE – Allows you to alter the default options for date style, default drive for your data files, and printer configuration.

Relating to it

The most difficult part about using any database is the planning required to set it up so that subsequent use of your information will provide you with useful information about your data.

Data Manager Professional is certainly no exception. Setting up a database is usually referred to as 'defining its structure'. The design of your records is partly determined by the type of variables you will be using.

A particularly important Data Manager Professional feature is that you are allowed to modify the structure of your data files even after data has been entered.

Each data entry in a record (ie. filing card) is called a 'variable' and is placed in a field (one or more lines in a record headed by a single label) relating to the variable. Each field has a value for each record. Each variable also has a type: Text, Number, Block, Class or Date:

TEXT FIELDS are represented by characters which are absolutes, ie. are not intended to be modified by mathematical or other processes.

NUMBER FIELDS are used where mathematical processes may be involved. Timeworks recommend that text fields be used for telephone numbers.

BLOCK FIELDS are variables consisting of two or more lines of continuous text.

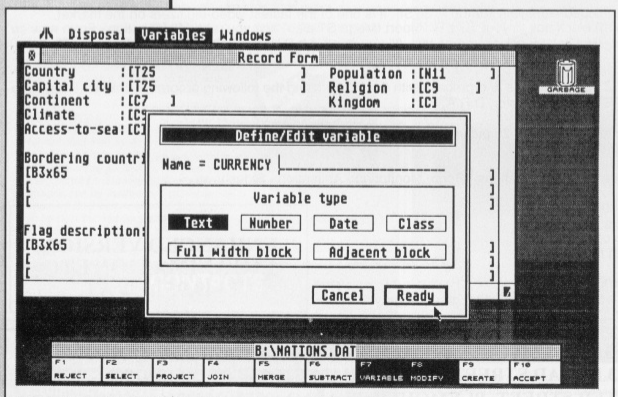
CLASS FIELDS – Are used where the range of data is limited to either yes/no or a user-defined range of values for input.

DATE FIELDS are used as references to data held in a record and may consist of current reference dates (ie, subscription renewals) or dates of historical significance.

Before your eyes

Once you have acquired a degree of familiarity with the system, you should need to make very little reference to the extensive ring-bound manual because each program module includes its own extensive range of help pages.

Moving through a file is done in any of several ways. Once you select the 'Display' option, you may move forward or backwards in a file, with the first and last records defined as



■ *Adding a variable to a database form*

file terminators, by using the up/down cursor keys.

Alternatively, you can use the mouse and GEM by selecting 'Previous Record' from the control menu. Small-ish jumps representing about 10% of the file may be incremented by left-clicking on the GEM slider bars.

As top-flight databases go, DMP's capacity is not massive, but files of up to 32,000 records are competently managed. New files may be created from selected parts of existing files by merging or joining, using the system's full set of relational operations.

Another powerful feature allows you to 'project' defined parts of an existing file, so that a new file may be built by extracting specific records from the original, with an optional automatic deletion of duplicate entries in a file. Command sequences for frequently used relational operations can be defined and 'played back'.

Sorting is RAM-based and, according to the manual, DMP will sort 4500 records in about 40 seconds. Manipulation of a group of records may occur in any of several ways. Customised reports may be generated in which you have the options of centering and/or justifying individual blocks of data.

Aptly demonstrating the real power of DMP, you can also use mathematical and conditional expressions to transform your data into text and figures.

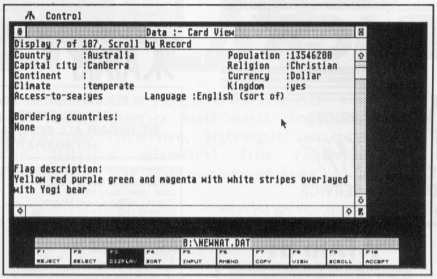
Data output

Small databases may only require examination from one end to the other, browsing through the range of records until you come to the one you are looking for. Large or complex databases, whether recipe and menu planners, names and address records or stock maintenance and control, usually benefit from an option to sort the data by any of several parameters.

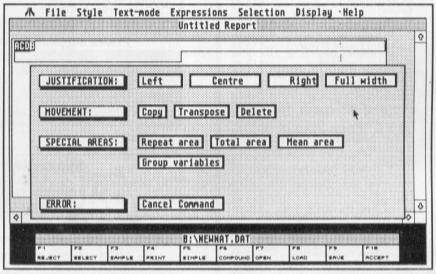
Extracting information from a DMP file may be done by a defined ordering of a group of records. Multi-level selection allows you to extract records by matching them against expressions involving one or more criteria, like "All men under 5'0" living in Hull and earning £10,000 or more". Repeating the selection process successively refines the group of records.

DMP's Report module provides you with facilities for building reports in one of three ways: where a report consists of data from a single record; a batch of records, with common data values such as books from a single publisher; or, a summary report whereupon data is reduced to statistical averages rather than details from specific details.

Another option provided is that, if you started with Timeworks *Data Manager ST* and have upgraded to the *Professional* package, you can use the CONVERT.APP utility to transfer files to your new system.



■ *Browsing through the geography database prepared with D.M.P.*



■ *About to extract a report from the data for a printout*

WHAT USE?

Applications for databases are as varied as it is possible to be. Virtually every sphere of human activity can benefit from a well-designed system. Household and personal management applications include library records (photographs, videos, books), names and address records (in which may be included recurring annual events and other memory-jogging information), household inventory for insurance purposes and much more. The hallmark of a good database is a variety of sophisticated features which seem very simple. The person using the database should not need any computer experience.

DEMONSTRABLY EASY

DMP's demo file consists of information relating to 103 countries. Data includes the usual information regarding capital, population, continent, religion and so on.

If you want to practice adding new fields, start up the 'Define' module from DMP's front end and load the demo file. Press [F8] to select modify, and [F7] to add a new variable. You will be presented with a box into which you type the name of your new variable. You will also have several options for defining the type of field, defaulting to 'Text'.

Having completed and accepted the input sequence, the screen is replaced by the record card, with the names, types and lengths of existing fields. Overlaying the record card is a box containing your new variable, which you can reposition as required.

Move the pointer over the variable and hold down the left mouse button to 'grab' the variable. Still holding the button down, move the variable using the mouse, until it is in the correct position.

Releasing the left button will close the box and install the variable. You then have the option of altering the length of the variable by moving the pointer to the closing square bracket and dragging it to the left or right. Existing variables can be modified in a similar manner.

Once you have made the required alterations to the record layout, save the file under a new name. It really is as easy as that.

for

- 'Relational' operators allow powerful data searches
- Exceptionally easy to use
- Easy to alter structure of existing files
- Exceptionally good report facilities

against

- Manual would benefit from a better index
- Professional worked examples would give a better idea of applications

features 0 1 2 3 4 5

performance 0 1 2 3 4 5

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SCREENPLAY

REVIEW

3D intergalactic epics are all the rage this month so, slipping into his green lurex jump suit and donning his laser filtered plexiglass helmet, intrepid space cowboy Andy Storer jumps aboard his faithful star-steed *Trigger* and heads for the nearest bar.

August saw 18 new games beaming into our offices and, while that's a little down on the last three months, we've currently got 155 up and coming titles listed for release in the next four. A quick check with our **DESKTOP ORGANIC CONSCIOUSNESS** reveals this to be a release rate of 1.270492 or so a day. This would mean that in **AN IDEAL UNIVERSE** you'd be able to spend something in the region of £10,000 a year on games if you so wished. Luckily we're forced to be more discerning and *Format* will continue to test only the best.

GAMES INDEX

FORMAT GOLD

Starglider 2 Rainbird 52
Federation of Free Traders Gremlin 56

REVIEWED

Eliminator Hewson 62
Vectorball Mastertronic 62
Carrier Command Rainbird 63
Hostages Infogrames 64
Starray Logotron 66
Summer Olympiad Tynesoft 68

Format Gold

At one point this month we thought all the games we reviewed would feature filled 3D graphics. Then *POWERDROME* and *ELITE* were delayed. No matter – possibly **THE** two best **SOLID OUTINGS** of the year made it in time.

STARGLIDER 2 won its **FORMAT GOLD** hands down. From the moment you boot you find yourself handling **A REAL SERIOUS SCI-FI SIM** – no wonder the Argonauts are working on a **STEALTH FIGHTER** simulation – if you had a 50 foot screen and **SENSURROUND ATMOSPHERICS** for this one you'd never be seen again.



The same could be said of *FEDERATION OF FREE TRADERS*, our other **FORMAT GOLD** winner. Expertly filled 3D graphics, Eliza-style comms, an onboard computer and a play area of around **25 BILLION TRILLION SQUARE LIGHT YEARS** make *FOFT* a **MASSIVE PROJECT** you could spend more than a lifetime playing.



And there's more...

The Amiga version of *CARRIER COMMAND* zoomed our way at a **COOL 200 MPH** and we patiently familiarised ourselves with all 55 pages of instructions and 67 control icons. Carrier is one of the few true **MULTISYNC ACTION** games on the market – flip between 8 airborne and surface vehicles at **ANY ONE TIME** – if you're still alive.

Staying alive is the whole point of *HOSTAGES*, the latest Infogrames release. That and killing. Although you're put in command of a **FRENCH HIT SQUAD** you're charged with storming something rather more taxing than that fishing smack in Auckland harbour. As **PER USUAL** the graphics are **PAR EXCELLENCE**.



STARRAY scores high in the graphics department too – if you ever bruised your thumb playing *DEFENDER* you'll love this one, though your thumbs won't. Its **MULTIPLANE PARALLAX SCROLLING** looks as good as it sounds. We'll just say we love the way the foreground moves faster than the horizon. Simple, but **ULTRA EFFECTIVE**.

AND FINALLY to *SUMMER OLYMPIAD*; a game with brilliant graphics which demands a work out. Your **SEOUL OBJECTIVE** is to win as many golds as possible without leaving your chair. Featuring a **HIGH DIVE SO HIGH** you'll reach **TERMINAL VELOCITY** before you hit the water, we can only conclude that *OLYMPIAD* takes sports sims to new heights. (Sorry.)

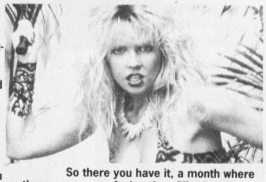


Ready for the **SERIOUS FUN** then ? Turn the page and do a spot of **INTERGALACTIC CRUISING**...

FROM THE CUTTING ROOM FLOOR

***Apologies time to the 11 outsiders who didn't make it. Amiga-wise we dropped the inflatable fun of BUBBLE GHOST*, the undoubted secrets of *IMPOSSIBLE MISSION 2*, the assorted mayhem of *ARMY MOVES*, the street cred carnage of *STREETFIGHTER*, the tangled screens of *TANGLEWOOD*, and the unintended humour of *VIXEN* and *BERMUDA PROJECT*. Love 'em or leave 'em is what we say. We left 'em.**

In the ST stakes we cut the spiralling green frogs of *NEBULUS*, the Alpine angst of *FINAL ASSAULT*, the alien hordes of *ZYNAPS* and the crazy cages of *HELTER SKELTER*. You can't love 'em all. Not many could buy 'em all either.



So there you have it, a month where there were more Amiga than ST releases – what on Earth is happening ?

REVIEW

STARGLIDER 2

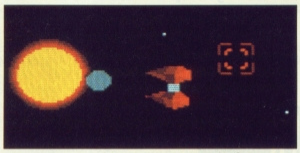
FORMAT GOLD

ARGONAUT/RAINBIRD

Amiga – £24.95. Joystick, mouse. Reviewed | **ST – £24.95 Joystick, mouse. Colour *and* Mono.**

The release of Starglider two years ago not only heralded 16-bit power as *the* future format for games software but convinced players that it was time to fork out the readies for the hardware. No other product gained so much coverage and sales and yet, ironically, as a technical achievement the look was distinctly 8-bit. Okay, so the wire frames moved fast and there were a lot of them, but at the end of the day Starglider was no more than a straight shoot-em-up with limited strategy. The sequel is a different game entirely and owes little to the original save for the name and the context. Sound, graphics and gameplay have all been radically overhauled.

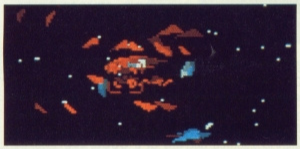
■ *Why not take time out and watch these guys have a go at each other ?*



■ *Better still, join in...*

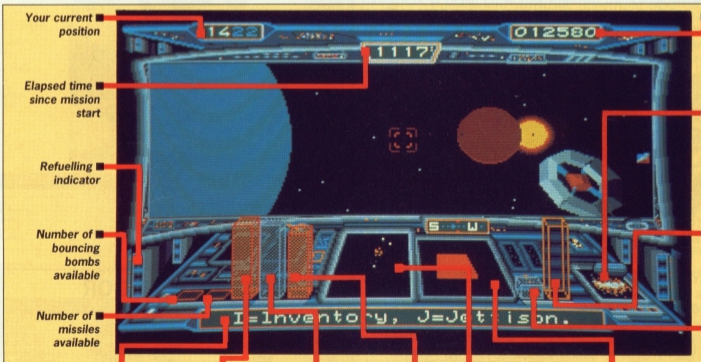


■ *...and rid the starways of pirates*



AIM

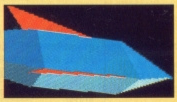
On behalf of the Novenian Council you have been despatched to the Solice System in a bid to prevent the Egrons from building a space station near the outermost planet of Aldos to house a weapon powerful enough to destroy Novenia. Beam Projectors are being deployed on each of the seven moons of an inner world, Millway, to protect the space station's construction. In your Icarus cruiser, you must visit the 15 worlds of Solice and collect the armaments, materials and the scientist required to produce a neutron bomb – the only device capable of taking out the space station. Along the way you encounter pirates, alien creatures and, of course, heavily-armed Egron opposition so it's best to regularly save your position.



YOUR ICARUS CRUISER CONTROLS



stargliders



whales

■ *Some of the lifeforms you'll encounter*



■ *You can sit and watch the Beam Projectors being constructed*



■ *When the work is done you simply fire off a bouncing bomb*

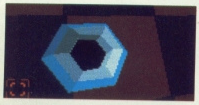


■ *And watch all that work go to pieces*

ST vs AMIGA

Starglider 2 has been developed using a dual format system which, like our own, holds both ST and Amiga programs on one disk. However Argonaut have taken this a stage further – a game position saved on the ST can be reloaded into the Amiga and vice versa!

The game was developed on Amigas and ported over to STs where it was found to run 10% faster. But ST owners needn't feel too smug – all you have to do is take a saved game around to a friend's Amiga and be knocked out by the fabulous sampled sounds. They transform the atmospherics entirely and more than make up for what is a barely discernable loss of speed.



■ *Time for a little underground exploration down this tunnel entrance*



■ *You make your way along a shaft...*



■ *...and come across a stash of missiles*

GRAPHICS AND SOUND

You might imagine Starglider 2 as a combination of Mercenary and Elite and you'd be right up to a point. Here though there are 103 filled 3D objects most of which are animated. On the ground you come up against stompers, walkers, petrified trees, pac-worms, bouncing balls, cars, tanks and silos, whilst in the upper atmospheres you can find space whales, ducks, rays, birds and stargliders. To keep you on your toes you will have to compete against 17 types of aggressor.

The array of 3D phenomena is brilliant; each moving object perfectly defined, rock solid and fast. Every object encountered can be accessed and manipulated from a library option available on start-up. An excellent inclusion which could have been marketed as a stand-alone feature. Starglider 2's major achievement is to get so many filled vector graphics on screen simultaneously with no apparent loss of speed. You may also switch to any one of 7 instantaneous 'Interceptor'- style external shots of your cruiser plus 9 different cockpit views of your current position. The instrument panel itself is worth a mention too for its laser, energy, fuel, speed and altitude indicators – each depicted by opaque 3D columns deemed to be holographic displays. Also of note is the currently selected weapon indicator which, with a hit on the shift key, flips between small animated cubes, bouncing bombs, missiles, lasers and mushroom clouds.

Sound is excellent too. From the FX of thunder and cannon fire to the thuds of stompers striding across the landscape the overall effect is a very convincing atmosphere throughout your mission.

STRATEGY

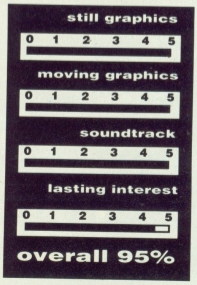
After learning to fly your cruiser – simply a matter of pulling and pushing the mouse for altitude and direction, and clicking the right mouse button for thrust – it's time to test out your gas plasma lasers by clicking the left mouse button. Thankfully, just about everything that moves can be annihilated with consummate ease. Once the controls have become reflex it's a matter of hitting R from time to time to get a status update and seeing where Egron Beam Projectors are being built. You can then activate your star drive and zip to your destination planet. Remember to shut down the drive before planetfall, though, or you'll lose your shields.

Most combat encounters occur between planets where pirates hang out and spend most of their time shooting each other up. Since they're preoccupied it's quite easy to take hundreds of them out. Some objects however, like beam projectors, require bouncing bombs. So first of all you must search the Solice system for underground arms depots. Labyrinthine tunnel networks are found on most planets and moons and provide safe access to other areas up top.

Depots are difficult to find and usually require a trade before you can take what they have to offer. Though like all true blue deep space renegades you'll be pleased to know you can also steal what's on offer with your tractor beam. This facility is very handy for refuelling - just lock on to one of the many asteroids to be found in a belt off Millway and all your energy levels will recover. Other weapons at your disposal, if you can find them, are Time-Warp cuboids - cunning little devils which time-warp doppelgangers into the path of whatever you shoot them at - Fire and Flee missiles which lock on to heavily defended objects and finally the neutron bomb – designed to destroy the Egron space station. To use this you must locate its designer and the necessary components to build it.

CONCLUSION

It's hard to find fault with Starglider 2 – it scores so highly in graphics and sound you'd be prepared to overlook any lack of gameplay. But it doesn't lack gameplay – you can play it as strategic exercise or load up and go out blasting everything in sight. Its game save facility lets you combine each approach without problem. Either way it leaves its predecessor standing.



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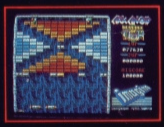




FROM ocean

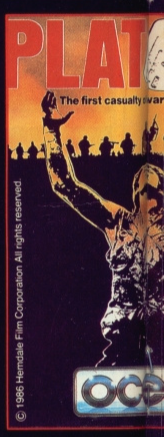


One phrase sums up the success and appeal of Arkanoid – "I'll just have another go!" Arkanoid is addictive! Using all the capabilities of the 16 bit micro this conversion is almost an exact replica with all the excitement of the original Taito coin-op smash hit. This is Arkanoid – the blockbuster.





FROM Imagine the name of the game



Exceptional graphics, innovative game design and digitised sound all add up to recreate the atmosphere generated in the box office smash hit. Closely following the original storyline you take your platoon, selecting individual men for assignment, who will encounter the enemy and their many booby traps as you seek to find the enemy's underground headquarters. On entering the warren of tunnels you will need flares and a keen eye – your enemy will lunge at you, from beneath the waters which flood the tunnel floor, wielding vicious knives – the atmosphere itself is enough to kill!

FROM oc

16 BIT STATE

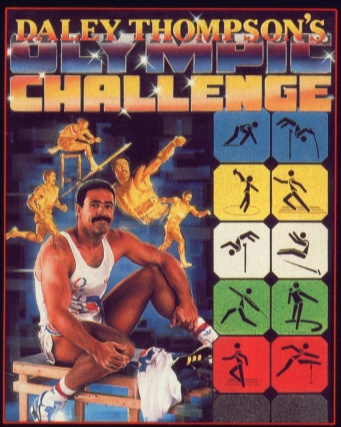
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REVIEW

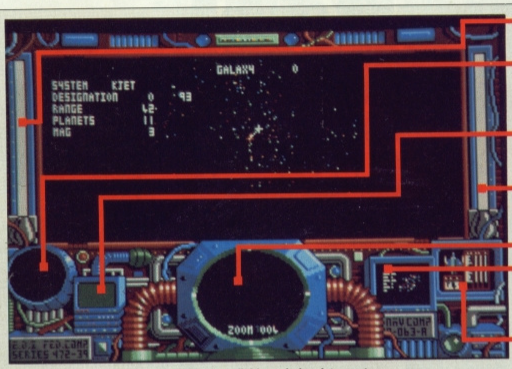
FEDERATION OF FREE TRADERS

FORMAT GOLD

PAUL BLYTHE/GREMLIN GRAPHICS

ST – £29.95, joystick | **Amiga – under development**

A perfect game could be one that is open-ended. There's no finite point at which you can say it's over – there's sufficient depth, breadth and randomness to ensure you slot it in your drive time after time. Federation may not be perfect but it has all these qualities in amongst its immense play area of 10^{34} square miles of galactic space. With the legendary Elite finally making it onto the 68000, you can judge just how much the space trading adventure genre has changed in the three years that feel like three decades.



■ *You select a galaxy from the 32,768 available and pinpoint a system*

GAMEPLAY

The Federation of Free Traders is an adventure in which you can choose to trade between 32,768 galaxies each comprising 256 solar systems of 16 planets in your Hartley Mkll starship. You begin the game as a Federation cadet and through successfully completing various missions, work your way through the eight ranks up to Pirate Prince status.

At first you are given badly paid, low-risk tasks such as delivering packages to distant planets or escorting freighters in the more civilised areas of space, so you must use this time to trade goods and build up sufficient capital to enhance your ship's capabilities.

There are 15 missions involving searches, investigations, destructions, evacuations and interceptions; each accruing different credit. Using Galnet – a galactic comms network – you are able to access stock market data on a range of commodities and buy, deliver and sell accordingly after time-skipping or hyperspacing to dock at space stations or planet-bound silos. You may choose to opt out of the Federation career structure at any time by ignoring mission briefs and simply playing the market. Perhaps you'll buy Class 1 lasers, shields and missiles with the proceeds and thereby acquire the offensive and defensive systems required to leap up the ladder of success.

Of course, in a play area of this scale, there's bound to be a whole host of aggressive adversaries amongst all the other traders, so you'll be relieved to know you can communicate with passing ships via an Eliza style parser before deciding whether to consign them to the Federation of Former Traders. Both Galnet and Eliza are accessed through Eddie – your ship's computer – a friendly little soul who'll be only too pleased to let you load in a supply of a dozen or so sub-games to help pass the space-time.



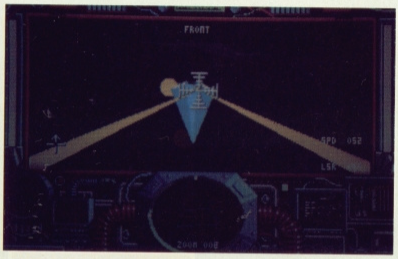
■ *You check each planet in turn for the best place to trade your wares*



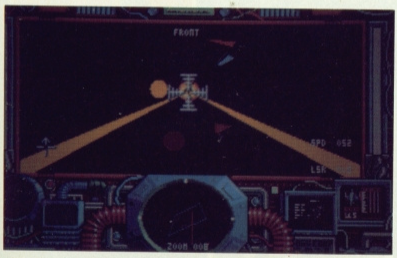
■ *A quick glance to see if all systems are go*



■ *This pirate decides to interrupt your journey*



■ *But you lock on with class 1 lasers*



■ *and it's goodbye*



■ *You call up Galnet..*



■ *And from the range of options.*



■ *Choose to view the commodities available*





■ *Ferrying some ferrous metals might be a good idea*



■ *If you feel like a little light relief on your long journey there's always Eddie the ship's computer to help you out*

CONCLUSION

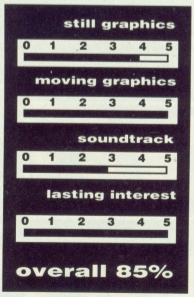
FOFT scores very high in gameplay and scale and employs some truly brilliant solid 3D graphics. The grand design is only marred by minor details but if you're looking for a game you can make a career of then this should definitely be on your list. It has all the compulsive alternate reality of Elite and more. Maybe in three years' time we'll all be crying out for the 32-bit conversions.

GRAPHICS AND SOUND

FOFT uses filled 3D vector graphics for all moving objects and planetary surfaces. Movement is extremely smooth – a distant ship becoming a full-screen presence with ease. Possibly the most advanced filled vector graphics to be seen on any micro are to be found on planet surfaces where terrain mapping consists of green plains, valleys, hills, forests, rivers, lakes and oceans, and gives the impression of filled fractal geometrics.

Up beyond the stratospheres lie 32 kinds of spacecraft which, whilst perfectly solid, do lack a certain design flair. The most interesting is your own ship which, unfortunately, you only get to see when you've been destroyed. But rotating planets in the solar system maps and the larger immensity of the galaxy's spirals are well crafted. Whilst such sophisticated vector graphics are employed it's a pity then that the Galnet and Eddie windows consist of the standard ST lo-res font on a green background – sharper, cleaner data screens would improve the overall look immeasurably.

The inconsistencies in visual presentation are reflected in the sound department. Although FOFT comes with a disk full of original 'classical' music, gameplay spot-effects are a let down. Possibly this is due to the ST's sound chip and perhaps the Amiga version will enhance the sounds of lasers and explosions but in the meantime the SFX are nothing special. Which is a shame because the graphics undoubtedly are.



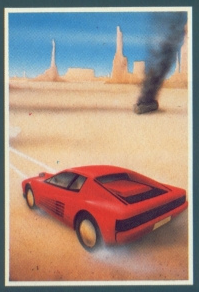


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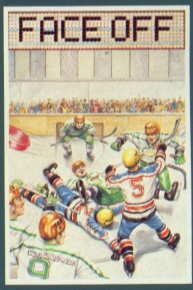




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BETTER DEAD THAN ALIEN

■ ST and Amiga

First the Quadrant Reference Codes for getting to any level:

ELEKTRA	FAUCET	ACOUSTIC	TIDDLY POM
SYZYGY	POTATOE	TRIPTYCH	KEWPIE DOLL
DRAMBUIE	WOOMERA	JABBERWOCKY	SEPULCHRE
PLUG	NARCISSUS	WHIMSICAL	EUPHEMISM
SOPRANO	DEBUTANTE	CORNUCOPIA	GRAMMARIAN
MAYONNAISE	FIRKIN	PUNJABI	CROSSWORD
			QUARANTINE

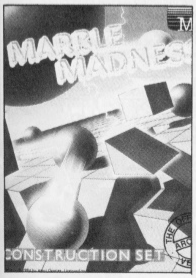


Amiga – load the game as usual and wait for the options screen to appear. Type CHAMP and you've activated the cheat mode. To display instructions on its operation, press [HELP] followed by fire. Wonderful weapon combinations are now possible. For instance, machine gun, superbolt and double ship.

Richard Clafton
Osmondthorpe, Leeds

ST – at any point in the game type ELV, press [HELP] twice and then the left mouse button. A screen appears, explaining the mechanics of the cheat mode.

Steven "I call myself Dave" Dunning
Bishopston, Bristol



MARBLE MADNESS

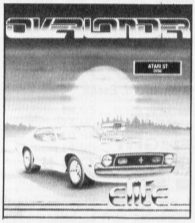
■ Amiga

Leave your marble stationary at the beginning of level one for a nice surprise.

Mark Henderson
Gosforth, Newcastle upon Tyne

Complete the level three maze and jump off the ledge. You will receive a jump bonus and you'll be transported to the secret water level.

Ashraf Mulla
Leicester



OVERLANDER

■ ST

Go for the highest value cargo. Fill up with fuel and save the rest of the money for the next level. Keep your speed between 105 and 120 mph; the green speed indicator should be one stop above the blue light. Going at this speed ensures you get through the Gunshot Alley safely – make sure you stay in the centre of the road though (*something like driving through the linked traffic lights in Slough – Ed*). Once through this stage you must increase your speed by two or three green lights. You should finish the level comfortably.

ROADHOGS: keep nudging them until they crash into a tree or rock. When you're on a straight stretch of road and see a car in front, keep to the centre of the road with machine guns pounding: as the car gets close it will swerve into your bullets and blow up.

KAMIKAZE'S: keep in the centre of the road with guns firing. The cars swerve from side to side – you'll get most of them by remaining in the same position.

OFFROADERS: keep to the left with barrels blasting for the first three levels. Bombs will drop to the right of you out of harm's way. On higher levels it is trickier as bombs are dropped on either side.

The best thing to buy is the Leanburn Conversion; this and a full fuel tank will get you though each level. Buy Lives when you have the money, followed by Battering Rams (for disposing of barriers) and Smart Bombs (for flattening everything on screen). Don't bother with Flame Bombs or Turbo.

M Jordan
Farnborough, Hants

ARKANOID

■ ST and Amiga

ST – press [Caps Lock] when the title screen shows and enter PAJ. This allows you to start from the level that you died on in the previous round. Alternatively press [Caps Lock] and type DEATHSTAR. If you press S during the game you will automatically pass to the next level. If you type DEATHSTAR PPAJ during loading, you will be transported to the last level.

Paul Dunn
Shrewsbury, Shropshire



Amiga – on the UK version it is possible to access a further 33 levels which simply aren't present in the coin-op game. Press F3 for a one-player game or F4 for a two-player game (rather than F1 or F2).

Andrew Davidson
Bournemouth, Dorset



CAPTAIN BLOOD ■ ST

A few tips plus the solution:

Tubularbrains, Kingpaks, Tromps and Tricephals give out no useful information. To get the Sinox to say something other than "Planet Sinox Forbidden – Code?" reply with "Impossible not Sinox"

Finding clone one: talk to the Yoko – he will tell you to find Maxon. You should then teleport Yoko to an uninhabited planet (any will do). Leave Yoko there and make for a Robhead planet. Once there, say "IZWAL" to the Robhead and he will give you a set of co-ordinates. Follow the co-ordinates; you will find Yoko (having been rescued by a clone). Give Yoko the identity of the planet where the Maxon can be located (this is Rendezvous 67) and he will give you the co-ordinates of your first clone.

Clone two: ask the Migrax called Missile Brave.

Clone three: ask clone two.

Clone four: ask the Yuka's president of Rosko. His co-ordinates can be found from a Buggol.

Clone five: same place as clone one.

Clone five will give you the co-ordinates of Torka the Ondoyante. When all the clones have been disintegrated, find Torka and teleport her. She will lie suggestively across the cockpit of your ship. All the icons will flash and Blood will start to shake. This is the end of the game.

Miles Fender
Lingfield, Surrey

IKARI WARRIORS ■ ST

When you get a high score, enter the name FREERIDE – this gives you invulnerability.

Sean Cliffe
Leeds, Yorkshire

SOCCER SUPREMO ■ Amiga

Low on money? Then sell a couple of players and take on some apprentices. Sell the apprentices to Division 4 for around £400 – the price jumps according to Division. For instance, it is possible to sell players in Division 1 for £40,000 (although it can be as little as £4,000). Keep selecting sell until you are offered a decent price. Don't sell too many palyers as the program will crash.

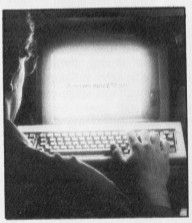
If you want to win every match you play, save your position at the start of the season and play one match. Load in your saved file if you lose or draw the first match; change the team and keep on playing until you win. Save the winning match. It is possible to reach the top of the Division by continuing with these tactics.

Mark Palmer
Chelmsford, Essex

FLIGHT SIMULATOR II ■ ST

If you wish to attain a certain height, but can't be bothered flying around for ages, turn SLEW on and press key [Q] to rise up. Slow down with key [A]. Turn SLEW off and away you go.

Andrew "Has anyone managed to fly under San Francisco Bay Bridge while doing a barrel roll? ...I have!" Jackson
Huyton, Liverpool



HACKER ■ Amiga

At the LOGON prompt enter one of the following:

00987	TITLE
PAM	COVER
WAMI	

And during the game any of:

RED7	BLUE1
WHITE6	WHITE50

L Pham
Gosport, Hants



PREDATOR ■ ST

Reset your computer, insert the ST Language Disk into drive A and double click on the drive A icon. Double click on the BASIC.PRG icon when it appears. Type in the listing exactly as printed. Insert Predator disk 1 into the drive and type RUN followed by a stab of the [Return] key.

```
10 ' Predator
20 ' infinite lives
30 ' by Daniel Bond
40 a$="a:helil.dat"
50 BLOAD a$,&H64A00
60 POKE &H6904E,&H4A79
70 POKE &H698CE,&H4A79
80 POKE &H6BA76,&H4A79
85 POKE &H6E094,&H4A79
90 cheat=&H64A00
95 CALL cheat
```

Daniel Bond
Worsley, Manchester

THIS MONTH'S WINNERS:

Miles Fender for finding out how to win at Captain Blood. Soaring his way are some fabulous ST games.

Richard Clafton for giving the game away at BDTA. Scorching Amiga titles are heading in his direction.

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Tips, pokes and game-busting ploys. Yes. We want the lot. If you've discovered a secret password, written a poke, mapped a game, completed an adventure, found how to get high scores or know of any underhand method that lets you win then send us details. By doing so you could win a collection of the best new games for your machine, ST or Amiga.

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We have had so much good stuff that we've had to hold a lot of it back. Don't worry, it will appear eventually. Keep sending in those crackers.



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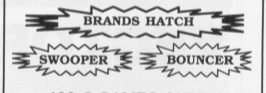
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REVIEW

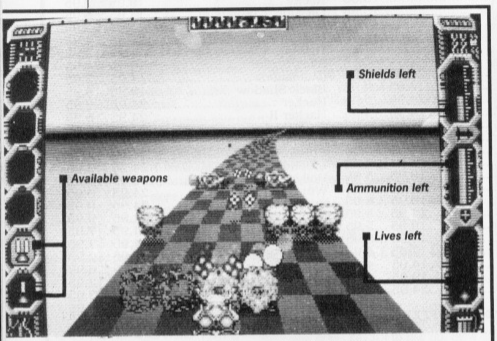
ELIMINATOR

HEWSON

ST – £19.99, reviewed. Joystick only

Amiga – £19.99, due soon

From the author of *Impossaball* and *Nebulus*, John Philips, comes some burn-up roadster violence. In *Eliminator* you fly a hover-ship along an undulating road that twists and curves through and over barren wastes, tunnels and space bridges. You control only its horizontal movement – height and speed are pre-set – but since the distance you can see ahead is constantly changing this is more than enough to occupy you. To make matters worse, there are masses of bizarre aliens firing blue charges at you whilst strange obstacles and barriers litter the route, making this journey a highway to hell.

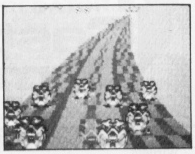


■ *Frantic or what? Your hover-ship blasts with both cannons*

Fortunately, you have a range of weapons at your disposal, collected by driving through revolving blue pyramids. Their ammo can be recharged by manoeuvring through orange cubes. You can switch between dual-fire cannons, bouncing bombs and triple blasters by pulling or pushing on the stick, though each time you're totalled you lose one of the five weapons available.

Adrenalin

Eliminator takes practice. Once you've worked out how to negotiate the twists and turns of the first highway stretch, it's on to the next and your trial and error starts again. Luckily, there's a password system for entering higher levels once you've mastered lower ones. At some points you find it difficult to be sure whether you're coming or going as certain sections involve inverted action where you're flying upside down along a road hanging in the sky! Like the recently released *Overlander*, the earliest stages are the most difficult and require masses of patience, but since you have every excuse in the world to blast the living daylights out of all that moves, it's the kind of patience that's never been a virtue.



■ *You burn up a spot of Australian highway*

In sum, a tortuous drive through fast scrolling assault courses of colour and carnage for auto-addicts with turbos charging on adrenalin.

still graphics 3.0
moving graphics 4.0
soundtrack 3.5
lasting interest 3.5
overall 70%

VECTORBALL

MASTERTRONIC

Amiga, £14.99, reviewed. Joystick only

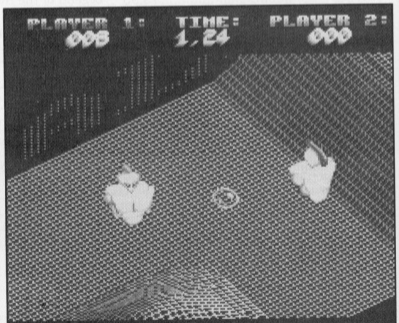
ST, £14.99, out now. Joystick only.

MAD MAD MAD, or Mastertronic Added Dimension as it says on the packaging. *Vectorball* is a curious blend of ice hockey, netball and bowls played on a choice of metallic pitches between two droids. The object of the game, curiously enough, is to score more goals than your opponent – this is great fun when you're playing a friend but the computer is almost impossible to beat.

You score by manoeuvring the ball to the end wall goal mouths though you're unable to move with the ball – you must remain stationary and shoot by pressing Fire. You can judge the power of the shot by checking out the length of your droid's 'neck'! The higher his little head hovers above his body the more welly in the kick. You can also work out exactly when your opponent's about to shoot and tackle him by running straight into him. Play can be quite confusing as the pitch scrolls to follow the movement of the ball – if your droid is out of sight you have a hard job working out which way to manoeuvring around the surface humps and dips.

Ditch pitch

Your play area may contain ditches, hills, valleys, ridges or a combination of each and all. On the Amiga version you can also choose between a dotted or shaded pitch – the latter takes ages to generate but is well worth the wait as the resulting play area takes on a 3D metallic 'sheen'. As you progress to higher levels the pitches become more and more irregular and difficult to negotiate.



■ *Shades of football, ice hockey, netball, bowls and metal in Vectorball*

You can also change the mass of the balls and droids, and versatility factors such as droid acceleration, breaking and friction.

While sound is largely confined to spot FX of bumps and crashes, the graphics are fine. At the end of the day, it's the kind of game you should be able to run as a desktop accessory.

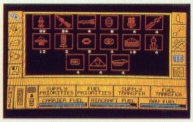
still graphics 4.0
moving graphics 4.0
soundtrack 2.5
lasting interest 2.0
overall 63%

CARRIER COMMAND

REALTIME/RAINBIRD

Amiga – £24.95, mouse, joystick. Version just out. | **ST – £24.95, mouse, joystick**

Carrier Command **caused a sensation by combining arcade action with a strategy game when it was released for the ST a couple of months ago, and now Amiga owners can get a slice of the action.**



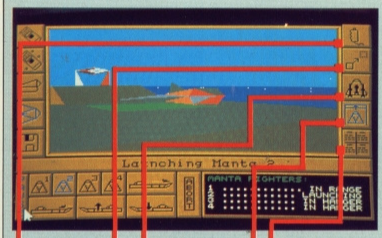
■ *The equipment stores and the range of hardware you'll find there*

GRAPHICS AND SOUND

At the time of its release on the ST, *Carrier Command* received acclaim for its filled 3D animated graphics almost on a par with the Archimedes' *Zarch*. However, the sight of a Manta lifting off from the Epsilon's deck, pausing in mid-air, and then accelerating away with the shot panning to maintain the Manta's position mid-screen leaves even Zarch/Virus 3D routines far behind. Accompanied by stereo sound and an increased number of spot-effects, the Amiga version pushes excellence to the max.

Although Carrier Commands's most endearing feature is the real-time icon control of multi-view synchronised action, there are a range of other screens to view. The revolving wire frame damage status screen, the cargo hold supply screens, the intelligence report updates and network status displays are all part of an impressive icon driven command system designed with great care and attention to detail.

■ *Your Manta is about to launch*



■ *Click here for manual control*

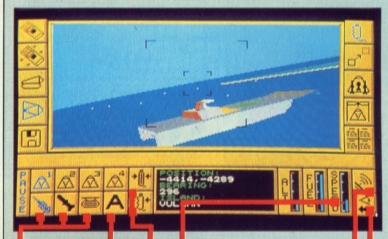
■ *Here to plot a course*

■ *Here for aircraft fitting*

■ *Click here for aircraft traffic control*

■ *For updated status reports on defence info*

■ *Up up and away*



■ *Various weapons available*

■ *Automatic pilot*

■ *Bank and pitch flight controls*

■ *Click on the blue to increase flight speed*

■ *To activate radar window*

■ *For rear view of action*

GAMEPLAY

You command the *ACC Epsilon*, a 200 knot aircraft carrier equipped with 8 Manta fighters, 8 Walrus amphibious tanks (AAVs), aerial reconnaissance drones, a laser turret and a whole host of tactical assault weaponry.

Your task is to secure an archipelago of volcanic islands from the rebel *ACC Omega* carrier in a bid to tap precious seismic energy. You achieve this aim by deploying your military resources in a war of attrition – systematically establishing bases on each island by despatching an Automatic Control Centre Builder pod. You have three types of ACCB at your disposal; Defence – for protecting the island network already under your control; Resource – for mining and refining raw materials and Factory – for manufacturing equipment from raw materials.

If the island is already under enemy control, a different strategy is called for. First you take out ground and aerial enemy defences – your AAVs are able to perform on auto-pilot or can be manually operated using the mouse and/or joystick. A quick click on an icon enables instantaneous switching between vehicles.

Arcade action is smooth, fast and furious. Heavily defended islands require a prolonged coordinated assault The coup de grace is storming of the island's control centre, necessitating the use of a Virus bomb which infiltrates the enemy's computer and miraculously puts it under your control.

Carrier Command involves a complex combination of strategy and arcade action. If the task seems too daunting you can opt for an action game on start-up which prepares a random but equally-balanced scenario deemed to take place midway through a strategy game.

CONCLUSION

The gameplay of Amiga Carrier Command is a significant improvement over the ST version where the wait-states endured while the Epsilon travelled between islands were almost long enough for you to plot an entire Mandelbrot set in your head. The result is as conclusively brilliant in all departments as you're likely to encounter without 100 MHz chips and hi-def monitors.

still graphics 0 1 2 3 4 5

moving graphics 0 1 2 3 4 5

soundtrack 0 1 2 3 4 5

lasting interest 0 1 2 3 4 5

overall 85%

REVIEW

HOSTAGES

INFOGRAMES

ST – £24.95, joystick. Reviewed

Amiga – £24.95, joystick. Due September

The first of ten Infogrames titles to be released over the next three months, Hostages is a strategic arcade game allowing six characters to be simultaneously controlled in a bid to storm an Embassy and free captives. Yes, urban anti-terrorism has made it to the micro and here it's a French SAS squad you command. Perhaps an assault on the Rainbow Warrior would have been more true to life!

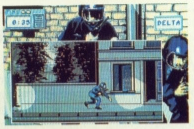


■ *A chopper delivers your hit men to the roof*

GRAPHICS AND SOUND

Hostages' graphics are impressively smooth and atmospheric. The exterior shots depicting the marksmen's locations and views stand as finely detailed backgrounds over which windowed foregrounds contain flowing animated action. Inside the Embassy, movement between rooms is temporarily halted by fast screen wipes which have the effect of compounding the tension. When you enter a new room, the brief pause for a screen change gives you just enough time to glimpse your environs map before you hit the trigger in anticipation of an encounter that may leave you with a colander for a stomach.

Sound effects feature some of the best gunfire samples around cut with the groans of dying men – well, what else would you expect in a game that deals with a death-squad going about its everyday duties?



■ *Ducking your way to a doorway as the searchlights beam in on you*



■ *You abseil down the outside wall looking for a window*



■ *Inside, you come across your first hostage*

GAMEPLAY

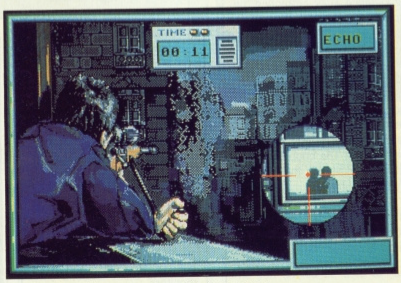
It's 5.45 a.m. and you're sorting out your strategy. After selecting the level of difficulty – determined by the total time to complete the overall mission – you have to place three marksmen at safe vantage points around the Embassy in preparation for a further three to be sent in by helicopter to its roof. One by one you position your marksmen along three sides of the building by guiding them with joystick between the terrorists' searchlights scanning the perimeter. There are various doorways and walls to hide behind as you dodge the sprays of machine-gun fire on your way to a pre-selected position. Dodging the flak involves a number of leaps and rolls which would ordinarily require high-impact rubber shoulders. Thankfully, you appear to be well protected all round as bullets bounce off you for quite a while before you finally hit the deck.

Once in place, you can flick to a sniper's eye view of the Embassy windows you're covering and attempt to take out the occasional figure you might sight behind the glass. But beware, the terrorists put hostages in the window from time to time.

You are then shown the arrival of your assault squad on the roof and select the first one to abseil down and go feet-first through a window. Once inside you view the proceedings from behind the nozzle of a machine gun. A small map indicates your position and that of any terrorists on that floor. As you move from room to room, fast close-up shots depict nearby doorways to add to the tension. Suddenly an armed insurgent will appear out of nowhere and you have no choice but to pump him full of lead. Action is very fast and you need to be pretty quick on the stick to turn him into a target. As there are 14 guys all ready and waiting to cut you in half, you'll be switching through to your second and third backups to flush out all floors and find and rescue the hostages.

CONCLUSION

Maybe a little dubious in the content department – but that's never deterred buyers of shoot-outs in the past – Hostages manages to effectively capture what we can only assume to be the edgy realism of an armed siege. Graphically, the game is up to the usual high standard of Infogrames' releases, so if you're after convincing atmospheric tension and the chance to feel the sharp end of law enforcement you'll find Hostages quite a liberating experience.



■ *You're in position now and can take in the sights*

still graphics 0 1 2 3 4 5

moving graphics 0 1 2 3 4 5

soundtrack 0 1 2 3 4 5

lasting interest 0 1 2 3 4 5

overall 78%

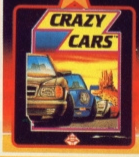
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Based on the popular arcade coin op, ENDURO RACER described as "THE BEST COIN OP CONVERSION AVAILABLE" (Popular Computing Weekly). From tarmac tracks to desert trails, a stunning motorbike race pitting you against time as you compete with deadly opponents and the cruel and challenging terrain...
© 1987 Activision, Inc.



The evil Zark has rendered all landscapes drab and grey. With the help of your faithful servant Catelite restore Wizworld to its former glory. Collect icons for special effects as you manoeuvre to shake off the alien forces. Stunning graphics create the mood for a thrilling and compulsive game with hordes of hidden features and extra controls.

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REVIEW

STARRAY

HIDDEN TREASURES/LOGOTRON

Amiga – £24.95, mouse, joystick. Reviewed. **ST – £19.95. Under development.**

Logotron's pioneer Amiga shoot-em-up *StarRay*, is the first game we've come across to feature a last game option to prevent you from playing it all day. Invoke this and you have to reboot to play again – essential when there are other, less enjoyable, things to do. Also a sure sign that the programmers know they're on to a winner.

■ *This kind of action requires mountains of patience*



■ *The radar scan – all objects besides you in the centre and the installations at the bottom are active and hostile*

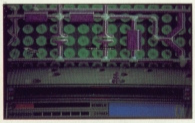
■ *The shield Bar shows your remaining energy supply*

■ *The vaporiser store – you have x smart bombs left*

■ *guess what?*



■ *In the jungle and up against all kinds of weirdos*

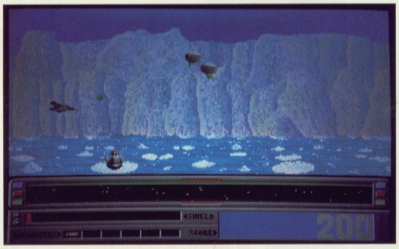


■ *In some silicon circuit somewhere...*

GAMEPLAY

StarRay has seven levels of multi-plane parallax scrolling screens through which you fly your fighter armed with lasers and smart-bomb vaporisers. The action is thick and fast and requires the kind of aerobatic skills you may have acquired in Defender and its clones. Your mission is to protect energy, robot and antigrav installations against alien hordes. The most common aliens are Landers which not only return fire but attempt to land on installations in order to transform them into gun emplacements. Other opponents consist of green spheres which explode to shower several pursuit UFOs in your direction, triads of meandering bombs, molecular flies and wasps, silicon worms, kamikaze bouncing springs and atomic-blue hunter-killers. Yep you guessed it, the action is feverish and somewhat bizarre.

Luckily, some Landers leave initialled bonus balls behind when you've terminated them. These produce a variety of effects if you can collect them by running through them – you can improve your acceleration and speed, gain rapid fire, greater laser penetration, limited invulnerability, continuous fire and bonus points. If you are especially good at dealing efficiently with the alien carnage merchants you may come across an Airbus which you have to make no mistake in shooting down. (*Is this an American import? – Ed*). On exploding, an Airbus releases a capsule which boosts your energy to max if you catch it. There is no other means of increasing energy and the game ends when you've run out. Fortunately, an option has been included which allows you to restart a game at any level from 1 to 4; though only in the first level will you possess maximum energy.



■ *Aiming to save the ozone layer*

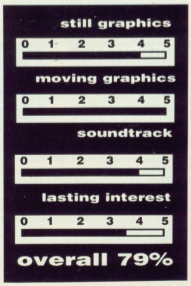
GRAPHICS AND SOUND

Each landscape is ingeniously coded to present fast moving foregrounds against slower moving horizons. This multi-plane screen grading has the optical effect of speeding up action considerably. Alien vehicles move quickly and with flicker-free solidity irrespective of the number on screen. Along with visual spot-effects such as explosions, the laser fire and vaporisation effects are sharp and clear.

Sound effects are also particularly impressive – vaporising an entire screen of aliens is greeted by what sounds like deep digitised groans. Loading and inter-screen music helps complete the overall sense of atmosphere.

CONCLUSION

A great first for Logotron's 16-bit market plans, StarRay provides state of the art multi-plane scrolling cut with frantic action. Although the game bears more than a passing resemblance to Defender this should be considered a positive feature since the original concept has been enhanced with a great deal of class and style. As Steve Bak is working on the ST version expect an equally comprehensive adrenalin assault on that machine too.



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REVIEW

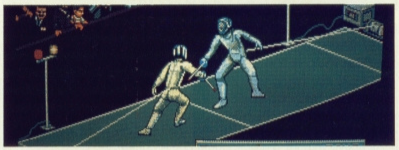
SUMMER OLYMPIAD

TYNESOFT

ST – £19.95, reviewed, joystick

Amiga – £19.95, joystick

Modern Olympics have been held since 1896 but it seems our American cousins haven't really caught on yet; this game has been released as 'Summer Challenge' over there. Ironically, this is probably more appropriate since the five sports events in Olympiad: the game – Triple Jump, High Dive, Fencing, Hurdles and Skeet Shooting could hardly be described as representative of Olympiad: The Games.



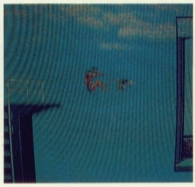
Fancy a fence ?



Just about to land after the nth attempted take off.



Shoot that skeet!



Mind you miss the gull



Hardly hurtling over the hurdles ?

GAMEPLAY

Up to 6 players compete in a pentathlon; after a brief opening ceremony, you find yourself with shotgun in hand ready for a spot of skeet shooting. You can opt for either mouse or joystick to move the cursor across the sky, controlling an animated figure with a gun. Each round has seven 'stations' requiring an average of 2 to 3 shots to complete. Thankfully you don't have to be too accurate.

Triple jump is next on the list and is the hardest of the five. You need to toggle your joystick from left to right very rapidly to gain maximum speed and then pull back to lift-off. Hit fire when you meet the take-off board and the animated figure hops and skips whilst you pull on the joystick again to determine the degree of jump.

Fencing is controlled by the joystick too and you play against a computer opponent whose parries and lunges are pretty competent. The three rounds last 60, 75 and 90 seconds respectively and in those times you must score as many rapier hits as possible.

The High Dive is perhaps the most fun since it's so high that a real person would probably shatter on impact. With the joystick you control the speed of tumble and amount of tuck before you pike and attempt to enter the pool as gracefully as possible. As the dive is so long it can get really complex – how about 30 forward rolls intercut with slow reverse cartwheels?

Finally, Hurdles has some of the best animation sequences to be seen on a home micro, as you race with four competitors to a finishing line in the distance. Running into a hurdle doesn't lose you points – just time.

GRAPHICS AND SOUND

Olympiad's graphics are of a very high quality. All screens are clearly drawn, smoothly animated and feature true perspective graphics. Each event is preceded by a different background music track and excellent start screens of hand drawn artwork. Tynesoft's programmers have concentrated on the animation of the competitors – most effort has been put into the movement of the hurdlers; the event commences with a tilting pan view, moving down from on high to track level. As the hurdlers dash off, your view remains constant, just behind your chosen competitor. The smooth animation of the hurdling is first class.

Sound plays a useful ambient role. From the gun shots in Skeet to the sound of running feet in Triple Jump, from the splashes of High Dive to the crash of a hurdle as you hit it, spot-effects are very convincing.

CONCLUSION

Despite excellent graphics, sound and gameplay, it's not as though your real-life performance in any of the five events would improve as a result of playing the game, so it wouldn't seem to appeal to the sportsman. However, it's graphics are record breaking and you should check it out for these alone.

still graphics 0 1 2 3 4 5

moving graphics 0 1 2 3 4 5

soundtrack 0 1 2 3 4 5

lasting interest 0 1 2 3 4 5

overall 77%

Always Reasonable Reliable And No Fuss

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REVIEW

QUICKIES

A pair of utilities come under the Format microscope – one to allow you to run mono and colour software all on the same ST monitor, another to save you Amiga disk space. How do they rate?

OMNIRES

£39.95 ■ ST only, all models ■ Eidersoft, Unit D7, Royal Mills, Esher, Surrey, KT10 8AS (0372 69922)

If you've got your ST hooked up to a colour monitor or television then doubtless you will have looked on in envy at the excellent picture-quality offered by Atari's SM124/SM125 mono monitor – not to mention all the sexy monochrome software that's out there. Similarly, if you have a monochrome monitor you'll probably have gazed in awe at the technicolour games and paint programs available to colour-monitor users. Stop feeling sorry for yourself! Eidersoft's *OmniRes* utility might just be the answer to your problems.

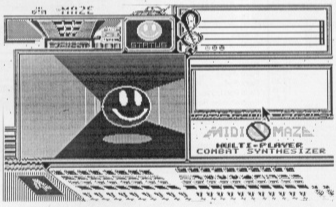
OmniRes displays the same meaningless eight-option menu no matter which monitor you have connected – meaningless because each item is called 'OmniResX' where X is simply a number. If you're emulating a colour monitor then the display choices are black and white, four grey scales and 16 grey scales. 1040 and Mega ST owners can also select a fast-updating version that uses 16 grey scales. The last four options are for colour programs that try to reset the screen colours during execution.

Naturally the fewer grey scales used, the faster screen updating will be. Colour pictures displayed on a monochrome screen look very sharp, but animations (games) can be reduced to half speed.

You're probably aware of what a mono emulator is capable of – especially if you have toyed with Mick West's version supplied with our own issues 1 and 2 disks. OmniRes only offers two versions of the monochrome emulator. The first version is for standard 520s and the other for machines with one megabyte or more (screen updating is faster).

The monochrome emulator has four display modes: a scaled representation of the 640 by 400 screen, an expanded top half of the screen (giving a truer mono screen aspect ratio), an expanded bottom half of the screen, and an expanded version that can be scrolled from top to bottom using the mouse. You can flip between these modes at any time.

Programs which stick to GEM's rules work well with either emulator. Protected games and other auto-booting software does not. Check with Eidersoft that OmniRes will work with the programs you wish to run. There are hundreds that do work and hundreds that don't.



■ *OmniRes emulating a colour screen on a mono monitor. Colours appear as shades of grey. All the features of Midi Maze are visible; unfortunately game speed is reduced.*

features	**4.0**
performance	**3.5**
ease of use	**2.0**
manuals	**2.0**
format verdict	**3.0**

DISKPRO+

£22 ■ Amiga only, all models ■ Amiga Centre Scotland, 4 Hart Street Lane, Edinburgh EH1 3RN (031-557 4242)

Why is it that no matter how large the capacity of your disk drive, be it 1MB, 10MB or even 100MB, your disks still seem to fill at an alarming rate? More often than not this is due to old files you are keeping 'just in case', although they may be of no immediate use. One solution to this problem is to compress all your archived files and then decompress them only when they are required.

DiskPro+ is a file compression utility that claims to decrease the size of a file by up to 50%. Four programs come on the disk that can be run from either the Workbench or from the CLI. The main program, *Disk Doubler*, allows for the compression and decompression of files from within a friendly icon-based front end, while the other three programs are firmly CLI based.

In our tests, several different files types were fed through DiskPro+ including an ASCII text file, an IFF 'ILBM' (picture) file, a Program file and an IFF '8SVX' (sound sample) file. The files sizes shown in the box were produced (all figures in bytes).

The figures gained are on the whole representative of what you would expect from most file compacting programs. The extra 18k added onto the IFF ILBM file is rather disturbing and demonstrates that there are definite flaws in the program's' compression technique.

One thing that you should consider before forking out for DiskPro+ is what it offers that PD compacting programs available in the Fish or Amicus libraries don't? Quite simply, nothing. Save £19, buy a PD disk.

File Type	Normal size	Compressed	Saving
IFF 8SVX	41288	40973	0.8%
ASCII Text file	14910	8041	46.1%
IFF ILBM	58670	76032(!)	–29.6%
Program	17464	15631	10.5%

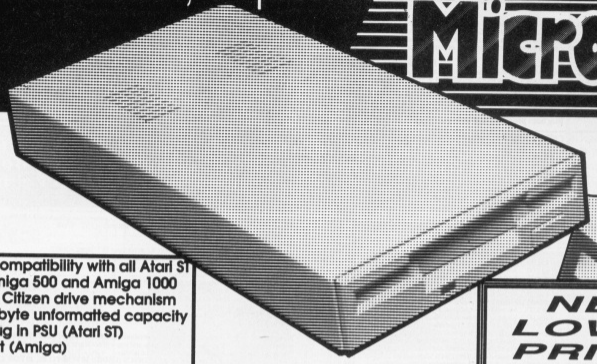
features	**2.0**
performance	**2.5**
ease of use	**3.0**
manuals	**2.5**
format verdict	**1.5**

COMPRESSION METHODS

For those of you who are interested, DISKPRO+ uses a modified Limpel-Ziv technique. This basically works by searching for common substrings and replacing them with variable sized codes. The compressed file is then saved with a .Z extension (z for Ziv?). In its compressed form, a file is of no use to anyone until it is fed through the decompressing program.

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DISK EXTRA

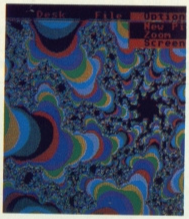
ST Amiga Format's unique dual format disk gives you the best of both ST and Amiga worlds! Jason Holborn details this month's cover disk programs.

ST

74 PIPE PANIC

Dig deep underground for 'Black Gold', while avoiding all hazards. It looks good, sounds good and plays great! What more could you ask for?

75 MANDELBROT GENERATOR



Mathematics can be fun! Create screens full of chaotic colour with this Mandelbrot pattern generator.

77 SPELLER

Avoid those embarrassing spelling mistakes with this great little Spelling Checker program. Speller even lets you add your own words to its dictionary.

77 ST_INIT

Load only the accessories you want. ST_INIT lets you keep your ST completely under control.

77 PRO CALCULATOR

Whether you're a programmer or just hopeless with numbers, Pro Calc will help you figure out the figures and suss out the sums.

77 RAT TRAP

Keep those menus firmly fixed to the menu bar until you want them. Rat Trap is a clever little mouse-click contoller.

AMIGA



74 MISSILE COMMAND

Defend your cities from another alien onslaught in this fast and furious arcade game. Missile Command uses sampled sounds for extra realism and will have you glued to your Amiga for hours on end.

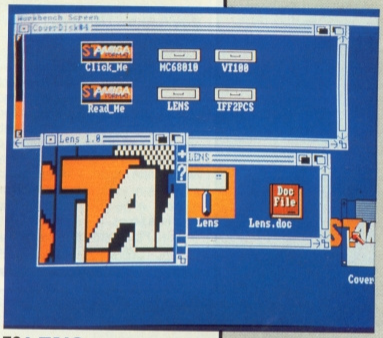


75 IFF2PCS

This great little game turns any low-resolution IFF picture into a jig-saw. We've even included a rogues' gallery for you to tamper with.

79 VT100

Communicate with the outside world using this fully-featured comms program. Join the comms brigade with VT100 and a modem.



79 LENS

Take the strain off of the old eyes with this handy little screen magnifier. Lens lets you zoom in on any part of the Workbench screen.

79 MC68010 UPGRADE

Keep up with the Joneses by upgrading your Amiga to a more powerful processor. Replacing the 68000 with a 68010 can speed up some programs by as much as 50 percent.

WE'RE PAYING £800 FOR GOOD SOFTWARE ON OUR COVER DISK

We're looking for good quality software to fill our cover disk each month. If you're a nifty programmer you could earn big bucks from your labours – games, business applications, utilities, or anything of general interest. We're also interested in any especially original graphics you may have created with art packages, either for inclusion on the disk or printing in the magazine.

Turn to the end of this section for more details on how to get your software onto the Format cover disk.

DISK

ST

First, copy and load the disk as described at the end of the Disk Extra section.

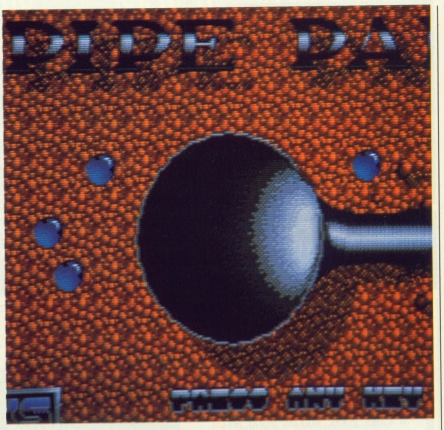
PIPE PANIC

by K.Swallow
Colour STs only
FILENAME: P_PANIC.PRG

Top of the bill on the ST this month is *Pipe Panic*, a game which features excellent graphics and sound. Written completely in BASIC, the program is a superb example of what can be achieved with the language professional programmers love to hate.

The aim of the game is to collect all the oil blobs scattered about the screen while avoiding the underground debris. Once you've completed one screen, it's on to the next in a challenging series of fifty. After every two screens there's a unique bonus game where you try to collect all the oil blobs in the fastest possible time for a high bonus.

Load Pipe Panic either by clicking on the P_PANIC.PRG icon on the desktop or by selecting it from our CLICK_ME menu program. Pipe Panic is written completely in Fast BASIC and uses the runtime system from that language to produce a stand-alone program. Once the runtime program has loaded, you have to load the game from disk by selecting 'Load Program' from the File menu. A file requester box appears listing all the files in the root directory of the cover disk. Click on the P_PANIC folder and then double-click on the file P_PANIC.BAS to load it. Once it's loaded, select 'Run Program' from the File menu, and the game starts.



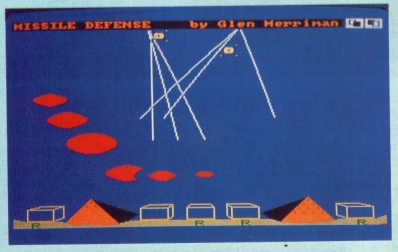
AMIGA

First, copy and load the disk as described at the end of Disk Extra. These programs run on all three Amiga models. We have been unable to test them on the early version of the Amiga 1000.

MISSILE COMMAND

Public Domain ■ All Amigas
FILENAMES: MISSILE_COMMAND, MISSILE.DOC

If fast and furious arcade action is your bag, look no further. *Missile Command* combines all the elements that make a great arcade game: great graphics, shuddering sonics and immediate playability.





The aim of the game is to prevent the oncoming holocaust as alien missiles rain down on your planet. Using a system Ronnie Reagan would be proud of, you aim to destroy the missiles in mid-flight, before they reach the ground, spelling certain doom for the human race.

You can load Missile Command either from our cover disk menu program CLICK_ME, or by clicking directly on the Missile_Command icon on the Workbench. The sampled sounds are not loaded but need to be called from within the program. Do this by selecting Load Sounds from the Sounds menu. The program always trys to load the game's sounds from drive df0: so always play Missile Command from disk in your Amiga's internal drive.

If you have access to a sound sampler or any sampled sounds in IFF format, it is possible to replace the included samples with sounds of you own. All the Missile Command samples end with `.sound` so you should have no problems finding them. To actually replace a sound, copy the new sound file onto the Missile Command disk with the same filename as any of the existing `.sound` files.



MANDELBROT GENERATOR

by J.Kelk
Colour STs only
FILENAME: MANDEL.PRG, MANDEL.DOC

Over the past few months, *Format* has been flooded with Mandelbrot sets (*and I forgot my trunks – Ed*). After exhaustive testing of all of them, J. Kelk's was judged the best.

A Mandelbrot image is the visual representation of a mathematical expression involving the area around the origin of the complex plane. Complex numbers aren't really within the scope of this magazine, but the results of plotting the Mandelbrot set are. The patterns are generated by this program on your ST – all you have to do is enter a few parameters and sit back!

A word of warning for those who expect instant results. Mandelbrot plots require a lot of very complex (sic) mathematics and even the mighty 68000 processor can get a little sluggish, so be prepared to wait. full instructions on the Mandelbrot set can be found in the program's documentation file, MANDEL.DOC.

MANDELBROT

The Mandelbrot Set was discovered in 1974 by a very clever chap by the name of Benoit Mandelbrot. Ever since then, computers around the world have been churning out pictures using his mathematical ideas. So what makes Mandelbrot pictures so fascinating? Well, the more you enlarge and examine areas of a set, the more complex it becomes. Although the area is finite – lying within the circle defined by $x^2 + y^2 = 4$ (at least that's what is says in Mandelbrot's book, The Fractal Geometry of Nature) – the edge is infinitely complex and of infinite length.

IFF2PCS

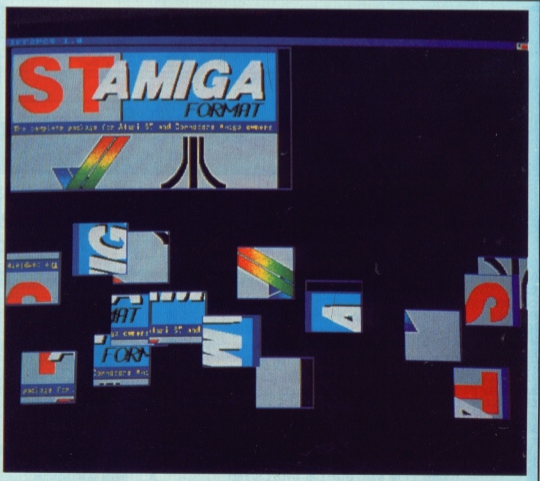
All Amigas
FILENAMES: IFF2PCS, IFF2PCS.DOC

IFF pictures are all very well, but they're not of much use once they're finished. It's a lot of fun drawing them, but once they're completed, they are usually just left on a disk for posterity – a classic case of 'art for art's sake'! IFF2PCS is an enjoyable puzzle game with the added advantage of making use of your IFF art.

IFF2PCS takes any low-res, 16 colour IFF picture and cuts it up into pieces. The size and number of these depends on the level of difficulty. The game isn't that demanding and if you've ever puzzled over a jigsaw then IFF2PCS will look very familiar.

IFF2PCS is run by clicking on one of the `.pic` files in the same directory as the main program – it can't be run by clicking on the program icon itself. Alternatively, you can load IFF2PCS from our menu program, CLICK_ME. Running from CLICK_ME automatically loads IFF2PCS with the same image each time, so to use any other you should load the program from the Workbench.

Any IFF low-res 16 colour picture can be used with IFF2PCS, as long as you first make a simple change to the default tool within its icon information file, so that it automatically loads the puzzle program. To do this, select the IFF file's icon by clicking on it from the Workbench, and press the right mouse button to show the Workbench menus. Select Info from the Workbench and the IFF file's icon information is displayed. Find the 'default tool' field and click somewhere within it. If there is already text within the field (eg a DPaint picture file will show something like `:DPAINT`), delete this, enter `:IFF2PCS` and press [Return]. Select SAVE and your picture file is fit for use as a puzzle, as long as IFF2PCS is in the root directory of your disk.



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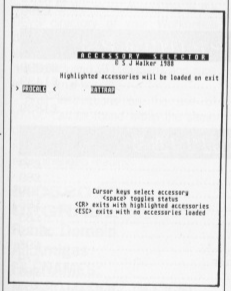
Public Domain
Medium/Hi-Res STs only
FILENAMES: SPELLER.TOS, SPELLER.DOC

Hoo neads a speling checcer? Sending letturs riddalled with speling misteaks to yor Banc Managur (*o ar two Fourmatt – Edd*) is a surtain way to impres him. If you're just one of the those people who never could get the hang of the English language and its peculiarities then Speller will be of great use to you.

It scans an ASCII file, checking the spelling of words by comparing them with its own dictionary of commonly used words. The dictionary grows each time it finds a word that is correctly spelt but not already within it.

When Speller finds a word it thinks is misspelt, it stops scanning the file and you can choose to ignore the word, change its spelling or enter it into the dictionary.

You can run Speller from CLICK_ME or by directly clicking on it's icon from the desktop. Once loaded, you will be prompted to enter the filename of the dictionary. The dictionary included on the cover disk is called SPELLER.DIC – enter this name including the full path to the file and the dictionary is loaded into memory. Finally, you enter the filename of the ASCII file you want to check and Speller starts doing it's stuff.



ST INIT

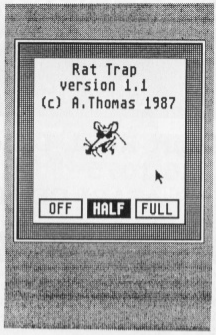
by S.Walker
All STs
FILENAMES: ST_INIT.PRG, ST_INIT.DOC

Desktop Accessories are wonderful things but they have two disadvantages: only six can be loaded at once and they take up memory all the time they're loaded, even when they're not running. Wouldn't it be nice if you could choose which accessories are loaded when the ST boots up? Well now you can with ST_INIT.

ST_INIT displays lots of useful information about your ST during boot, lets you set the system time and date and select which accessories are to be loaded.

You can load ST_INIT either by selecting it from CLICK_ME or by clicking on ST_INIT.PRG from the desktop. Although ST_INIT runs fine from the Desktop, it was designed to sit in the AUTO folder of your work disk. Copy ST_INIT.PRG into the AUTO folder by dragging it to the AUTO folder icon on the root directory of your work disk.

Full instructions are included with the program under the filename ST_INIT.DOC.



RAT TRAP

by A.Thomas
All STs
FILENAMES: RAT_TRAP.ACC, RAT_TRAP.DOC

How many times have you accidentally moved the mouse pointer over the menu bar on the GEM Desktop and dropped down a menu that you didn't want? It can get annoying after a while can't it! Help is at hand in the form of Rat Trap, an incredibly useful Desktop accessory.

Rat Trap alters GEM so the menus only drop down when you click on the menu's heading in the menu bar, the way the Macintosh does it. Two modes are available, 'full' and 'partial' and if Mac menus don't appeal to you, Rat Trap be turned off altogether.

Rat Trap is a desk accessory and therefore cannot be loaded like a conventional program from the CLICK_ME menu. To be able to use any accessory file it must sit in the root directory of your boot disk. Copy RAT_TRAP.ACC into the root directory of your disk by dragging it from the RATTRAP directory of the cover disk. Reset your ST and insert your work disk into drive A. GEM automatically loads Rat Trap and any other accessories and lists them in the Desk menu.

DISK DOCUMENTATION

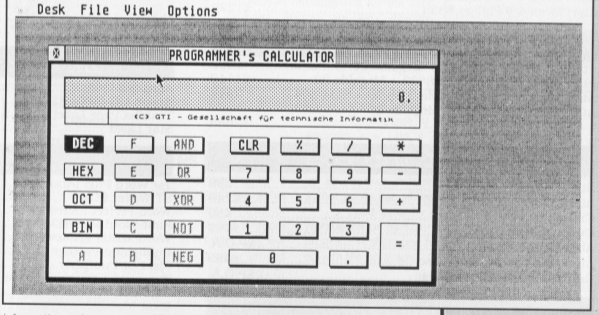
Many of the programs on *ST Amiga Format* disks are Public Domain. In such cases we've simply passed on their standard documentation files unchanged, as is required by the PD code of practice. Some of the phrasing is 'idiosyncratic', shall we say, so please don't blame us for misspellings!

PRO CALCULATOR

Public Domain
All STs
FILENAMES: PRO_CALC. ACC, PRO_CALC.DOC

One nice feature of the Amiga's WIMP system is the very handy calculator included on every Workbench disk. This little gem (sic) of a program is invaluable component in the Amiga's Workbench arsenal. With Pro Calc, ST owners can also benefit from having a calculator resident as a Desktop accessory. Once installed, select Calculator from the Desk menu and a powerful programmer's calculator is instantly at your disposal.

Pro Calc is an accessory program and therefore cannot be loaded like a conventional program from the CLICK_ME menu. To use any accessory file it must first be put in the root directory of your boot disk. Copy the PRO_CALC.ACC file onto the root directory of your disk by dragging it from the CALCACC directory of the cover disk. Reset your ST and insert your work disk into drive A. GEM automatically loads Pro Calc and any other accessories and lists them in the Desk menu.



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VT100
Public Domain
All Amigas
FILENAMES: VT100, VT100.DOC

If you've read the rest of *Format*, you'll be aware that this month's issue features a packed article on communications. More and more people are getting into comms and every day we hear news of new bulletin boards around the country. No matter what your interests, there's nearly always a bulletin board that can cater specifically for you. To get involved with the upsurge of interest in comms you'll need a modem and suitable software. The choice of hardware is entirely up to you, but for software we present the VT100 emulator, a full-featured comms program.

Even if comms isn't of interest, VT100 can still invaluable. If you're the owner of more than one computer (ST and Amiga?) then you can use VT100 to transfer files between the two, through their serial RS232 ports. Both the Amiga and ST feature standard RS232s and we at *Format* use VT100 to transfer files between our Amigas and STs and Macintoshes. Of course you'll need a similar package on the other machine, but these are readily available commercially and from the Public Domain.

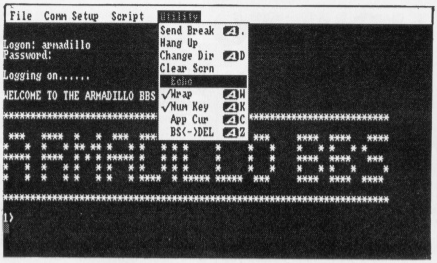
You can run VT100 by either clicking on it's icon or by selecting it from the CLICK_ME menu. VT100 requires access to the serial.device file in the DEVS directory of your Workbench disk. When you're prompted for your Workbench disk, follow the on-screen requesters and VT100 loads and runs with minimal hassle.

Full instructions on the use of VT100 can be found within the same drawer as the VT100 program in the file VT100.DOC. This file is definitely recommended reading.

MC68010 UPGRADE
Public Domain
All Amigas
FILENAMES: MC68010.DOC, DECIGEL

As this month's *Futures* feature on 680X0 processors explains, the 68000 used in the Amiga and the ST is a rather dated piece of silicon. The latest addition to the 68000 family, the 68030, runs at an astounding 20 MHz. Upgrading your Amiga to a 68020 or higher is a tricky task because the chips are not *pin for pin* compatible with the 68000. Luckily the 68010 has the same pin arrangement and it's therefore possible to swap the old chip for a 68010 with few problems.

Installing a 68010 in your Amiga can improve its speed from 8 to 50 percent, depending on the program being run. Any program that accesses the Amiga's custom hardware will be slowed down to keep everything in sync, but speed improvements really start to show with programs that carry out a lot of heavy number crunching, such as Sculpt 3D.





Sounds great doesn't it, but there's a slight snag. The machine code instruction `MOVE SR,<ea>` is fine on a 68000 but it is illegal on the 68010 in some cases. Any program which uses this instruction on a 68010-based computer is therefore likely to crash the system. Luckily there is a software fix for this problem in the form of the PD program, DeciGel. DeciGel sits in the background and intercepts MOVE SR,ea instructions, replacing them with an equivalent legal instruction. We've included the DeciGel program with the instruction file, MC68010.DOC, so everything should go smoothly.

FORMAT WARNING: This upgrade is definitely not for the faint hearted. Amigas are very delicate machines and can be easily damaged. Opening your Amiga will instantly void your guarantee.

GIVING IT AWAY

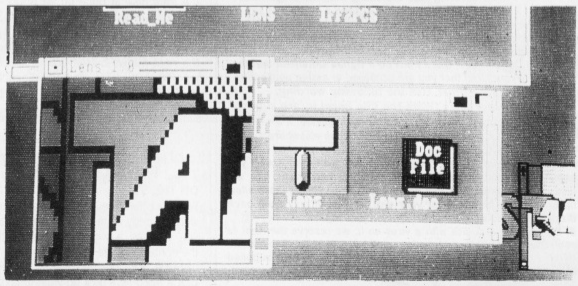
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LENS
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FILENAMES: LENS, LENS.DOC

Lens is another intriguing solution looking for a problem to solve. It's great fun to use so we've included it anyway – perhaps someone will think of a good use for it. The program provides a 'zoom window' similar to those found in art packages like *Deluxe Paint*. By moving the mouse pointer around the screen you can view a close-up of any part of the Workbench screen.

On the side of the Lens window are three gadgets, a '+' sign, a '-' sign and a question mark. Click on the '+' or '-' to increase or decrease the magnification, and on the question mark to bring up an information window showing details of the author so we can all revel in the knowledge.

Load Lens by clicking on its icon on the Workbench or by selecting it from the CLICK_ME program. A short text file from the author is included with the program.



DISK

HOW TO USE THIS DISK

The *ST Amiga Format* cover disk is a special format disk which both the ST and the Amiga can read. Even if you are a seasoned computer user, please read these instructions carefully or you could permanently damage your copy of it.

The first thing you must do is make a backup copy of the disk. Because of the special format, the normal disk-to-disk copying methods, as recommended in the Amiga and ST manuals, won't work. Instead you will need to format a blank disk and copy the files individually. Don't panic, this isn't at all difficult.

DISK TROUBLE?

We have done our best to check that the programs supplied on this month's disk are simple to use, error free and have no known viruses. However, we cannot answer telephone queries on using the software and we do not accept liability for any consequences of using the programs.

We duplicate 40,000 disks a month, and it is inevitable that a few will be faulty. If, after you are sure you have followed the instructions on this page correctly, you are convinced that your cover disk is defective, you can send it back for a free replacement to:

ST Amiga Format October Disk, DisCopy Labs, 20 Osyth Close, Brackmills, Northampton NN4 0DY.

Please allow up to two weeks for your disk to be processed.

AMIGA OWNERS: If your Amiga refuses to recognise the disk, before sending it back try using the DISKDOCTOR utility as described on page 93 of issue 1. Don't worry that every track gives you a 'hard error' – this is the Amiga being unable to read the ST parts of the disk.

WE WANT TO GIVE YOU MONEY!

If you've got any programs for either ST or Amiga which you think other readers would find useful, interesting or amusing, we'd like to know. Here's how to go about securing international fame for yourself:

1. Only send in programs on 3.5" disks; we cannot accept printed listings.

2. Make sure your disk is clearly labelled with your name and address and the program name(s), and is marked 'ST' or 'Amiga'.

3. Make sure there's a documentation file on the disk called README.

4. Enclose a clear covering note explaining what the program does, and if you possibly can please also send a printout of any on-disk documentation files. Remember your address and telephone number. Include a stamped return envelope for the disk if you want it back.

5. THIS IS IMPORTANT: there must be a signed statement that the program is yours and that you are prepared to assign publication rights to ST Amiga Format. Use the following wording:

The program/s (write the title here) is/are submitted for publication by ST Amiga Fórmat magazine. It is my own work and has not been submitted for publication elsewhere.

Signed ...

If we accept your program, we will get in touch with you before publication to agree terms and payment rates. We will evaluate all submissions in a batch once a month, so please allow up to 40 days for return of your disk/s. We will only send back disks with adequate return postage and packing.

6. If you send us a disk with a virus on it, we reserve the right to send round the heavy mob in the small hours and do unspeakable things to your pet budgie. Seriously, since we've already supplied Virus-killer programs (in Issue 1), do check your disks very carefully.

ON THE ST
(Assuming a single drive machine)

1. Take a blank disk and format it in the usual way.
2. With the blank disk still in the drive, double click on the A disk icon to open up the (blank) contents window.
3. Now drag the icon for disk B into the open window of disk A. This will copy all the files one by one off the master disk to your new disk. *Make sure that the master ST Amiga Format* disk is write protected (the sliding tab should be back so the hole is open) and put it in the disk drive when asked for disk B.
4. You will now be prompted at various times to insert disk A and disk B while copying takes place. There will be a lot of swapping to do on a single drive ST! Disk B should be the master disk, disk A your newly formatted copy.

If you want to cut down on disk swaps and understand enough about the GEM, you can set up a RAM disk using the utility provided on the July 1988 disk and use that as an intermediate step.

ON THE AMIGA
(Assuming a single drive A500)

1. Start your Amiga up with your normal Workbench boot disk.
1. Take a blank disk and initialize it in the usual way.
2. *Make sure that the master ST Amiga Format* disk is write protected and put it in the disk drive. Double-click on the disk icon that appears. Drag any icons you see in the contents window onto the 'RAM disk' icon.
3. When the disk activity light has gone out, put your newly formatted copy disk in the drive instead. Double click on the RAM disk to open its window up, and drag icons from that onto the new disk icon. This will copy the files one by one.

The programs may not all fit in the RAM disk at once on an A500 – do whatever will fit, then after step 3 delete them from the RAM disk by clicking once on each and, holding the right mouse button down, selecting Discard from the Workbench menu. Repeat steps 2 and 3 for the rest of the icons.

USING THE PROGRAMS

ON THE ST

When you turn the ST on and put your working copy of the disc in the drive, you will see a window opened with the contents of the disk displayed.

One of the icons is called CLICK_ME.PRG – just do what it says, double-click to run it. Up comes a list of the disk contents. Type the number of the program you want to run, and you are asked whether you want to read the disk help file or not.

You will now be asked whether you want to run the program or not. As an alternative to using CLICK_ME.PRG, if you know enough about GEM you can click directly on the icons for individual programs. These normally end .PRG with the documentation files having the same name as the program to which they refer, but with a .DOC filetype. Always read the documentation before running the program.

ON THE AMIGA

Most of the programs on the cover disk are run from the Workbench, which must be loaded first from your normal start-up disk, as described in the Amiga manual. Once at the Workbench, put the ST Amiga Format disk in the drive and double-click on its icon to open it.

You will see an icon called CLICK_ME – this is a menu program which takes you into the programs and their documentation. Double click on its icon to run it; it will ask you for a couple of disk swaps, so just follow the on-screen requesters to load the program.

Most of the programs on the disk can be executed from CLICK_ME by selecting them from the menu and choosing either to view the program's documentation or load the program. If a program fails to load from this menu (this sometimes happens through shortage of memory on unexpanded systems), you can load it



from the Workbench instead, by clicking on its icon.

To load a program from the Workbench, you must first Click open the drawer which contains it. For detailed comments from the program's author click on the .DOC file icon in the same folder; to run the program click on the main icon.

When you click on a documentation file, a new window is opened and the text is displayed a screenful at a time. Press any key to move from one screenful to the next, or click on the close gadget in the top left-hand corner of the window to cancel the display. The READ_ME icon gives you a brief summary of the disk's contents and how to use it.

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PROGRAMMING

LEARN BASIC

This month intrepid programmer Richard Monteiro spends his time going around in loops but only after reaching the right decision. Here are all the right conditions for getting the most out of BASIC.

Our day to day lives are generally influenced by conditions: when the clock-alarm goes off in the morning it's time to get up, if the milkman hasn't been then Frosties are out, if it's raining then take an umbrella to work, 'Nothing acts faster than Anadin' – so take nothing. Similarly, many BASIC instructions look out for conditions or occurrences and, if they are met, divert the micro's attention to another part of the program to execute specific commands.

There's a wealth of BASIC instructions devoted to condition testing. For instance, FOR..NEXT loops check for a condition: they continue looping round until a variable reaches a particular value:

```
FOR counter=10 TO 1 STEP -1
LOCATE 1,1
PRINT counter;" armadillos
sitting on a wall..."
NEXT counter
```

This program keeps printing a number and message until `counter` reaches one. This should be nothing new to you, if you followed last month's article (a sentence which in itself is an example of a condition).

Now you've seen FOR..NEXT loops in a different light, check out a few other condition-testing commands. Possibly the most popular conditional test in BASIC is IF – its semantics and syntax are almost identical to those in English. For example, 'if your lives are equal to zero then you are dead' could be written in BASIC as `IF lives=0 THEN PRINT "Dead"`.

So many decision-making commands are associated with IF that following the logic of the full structure can be difficult. However, here are the rules of syntax. Stick to them and you won't go far wrong:

```
1) IF <expression> GOTO
<label> ELSE <else-clause>
2) IF <expression> THEN
<then-clause> ELSE <else-
clause>
3) IF <expression> THEN
<statement>
ELSEIF <expression> THEN
<statement>
ELSE
<statement>
END IF
```

According to the first and second rules, the examples

```
IF armadillos=0 GOTO dead,
IF Ed=bananas THEN PRINT
"Yo!"
```

and

```
IF x/34<>t^3 THEN
answer$="Incorrect" ELSE
answer$="Correct"
```

are all acceptable. So how does it all work. Well, if the result of *expression* is true or a certain condition is met (check out the panel on logic if you're unsure what we're waffling about) then the THEN-clause is executed or the program branches (if GOTO is used instead of THEN).

Statement blocks within IF ELSEIF, ELSEIF ELSE and ELSE END IF can contain nested IF THEN ELSE



LOCATING STRINGS

The INSTR function has the format:

```
INSTR(start,string1,
string2)
```

and returns the position of the first occurrence of one character or string (string2) within another string (string1). Start is an optional integer variable specifying the start position of the search within string1.

INSTR returns the following values:

1) The start position of string2 in string 1, if found.
2) Zero, if start is larger than the length of string1.
3) Zero, if string1 is a null string.
4) Zero, if string2 can't be found.
5) Start (or 1 if start is not specified), if string2 is a null string ("").

RELATIONAL AND LOGICAL OPERATORS

Relational operators are used to compare two values. The result of the comparison is either true (which in micro terms is normally equal to –1) or false (normally 0). The result of this type of test can be used to make a conditional branch, using IF THEN, WHILE WEND or that sort of structure. The relational operators are:

Operator	*Relation tested*	*Example*
=	*equals*	*IF year=leap year*
<>	*does not equal*	*WHILE day<>night*
<	*less than*	*WHILE job<desirable*
<=	*less than or equal*	*IF Laurel<=Hardy*

Power BASIC also offers == (almost equals) which can be used to check for near equality.

Logical operators can also be used for making conditional branches. They perform bit manipulations (checking one bit of a byte against another), or Boolean logic tests. Logical operators return results from a combination of True or False operands. The result is either true (-1) or false (0). The True or False combinations and the results of a logical operation are known as truth tables. The six logical operators are NOT, AND, OR, XOR (exclusive or), IMP (implication) and EQV (equivalence). The table below shows the result of these operations; T indicates a true value and F a false value:

a	*b*	*NOT*	*AND*	*OR*	*XOR*	*IMP*	*EQV*
T	*T*	*F*	*T*	*T*	*T*	*F*	*F*
T	*F*	*F*	*T*	*F*	*F*	*F*	*T*
F	*T*	*T*	*T*	*F*	*F*	*T*	*T*
F	*F*	*T*	*F*	*F*	*T*	*F*	*F*

If both operands are either 0 or –1 then the logical operator will return 0 or –1. For instance, PRINT –1 AND 0 returns 0. It is possible to use logical operators to test bytes for a particular bit pattern: AND can be used to mask all but one of the bits of a status byte, OR can merge two bytes to create a particular value. Heavy stuff that we shall be covering in more detail in a later issue.

blocks. Thus the following example works, though is quite tricky to follow:

```
IF ed$="Simon" THEN
IF armadillos>12 THEN
PRINT ed$+"'s husbandry tips
work well."
ELSE
PRINT "Armadillo population
dropping."
END IF
ELSEIF ed$="Ben" THEN
IF armadillos=0 THEN
PRINT ed$+"'s having
problems on the armadillo
farm."
ELSE
PRINT "Population explosion
predicted."
END IF
ELSE
PRINT "So who are you?"
END IF
```

So how does it work? The first IF checks the contents of ed$; if the string is found to be "Simon" then control passes to the first indented IF structure. If the condition is false, though, (that is, ed$ does not equal "Simon") then the program jumps to the ELSEIF. Again ed$ is checked, but this time for "Ben". If this test proves false, control passes to the last ELSE and a message asks who you are. The program then hits END IF and stops.

Wend a while

That's enough IFs for a while. WHILE WEND expressions execute a series of statements in a loop as long as a given condition is true. For instance:

```
WHILE UCASE$(query$)<>"N"
INPUT "Enter any number: ",
num
FOR t=1 TO num
IF num/t=num\t THEN PRINT
t;"divides into";num;num/t;
"times."
NEXT t
INPUT "Run again
(Y/N):",query$
PRINT
WEND
```

As long as query$ doesn't contain "N" the loop keeps looping. WHILE WEND loops may be nested to any level (for instance,

```
WHILE <condition>
      WHILE <condition>
      WEND
WEND).
```

Take care not to leave any unmatched WHILEs or WENDs – you'll get an error message from BASIC. Also, do not direct jump into the middle of a WHILE WEND loop as this will really confuse things. The following is wrong and should never be used:

```
GOTO location
STOP
WHILE a<20
location:
a=a+1
WEND
```

Computed branches

By using ON GOTO and ON GOSUB it is possible to branch to one of several specified lines depending on the result of an evaluated expression. GOTOs and GOSUBs of this nature are usually known as "computed" branch commands. The syntax is `ON <expression> GOSUB <line-list>` and `ON <expression> GOTO <line-list>`:

```
retry:
a$=INKEY$
IF a$="" THEN GOTO retry
ON INSTR(a$,"123") GOTO sec-
tion1,section2,section3
GOTO retry
section1:
PRINT "Program section one"
GOTO retry
section2:
PRINT "Program section two"
GOTO retry
section3:
PRINT "Program section
three"
GOTO retry
```

The program section executed depends on the value returned by INSTR. If the value is "1" then section 1 is executed, if "2" then section 2 is executed, if "3" then section 3 is executed. Try the following example which uses GOSUBs rather than GOTOs:

```
FOR a=1 TO 3
ON a GOSUB sub1,sub2,sub3
NEXT a
STOP
sub1:
PRINT "Subroutine one; a=";a
RETURN
sub2:
PRINT "Subroutine two; a=";a
RETURN
sub3:
PRINT "Subroutine three;
a=";a
RETURN
```

DOING IT FOR THE FIRST TIME

Using BASIC for the first time? Here's how to get the program up and running:

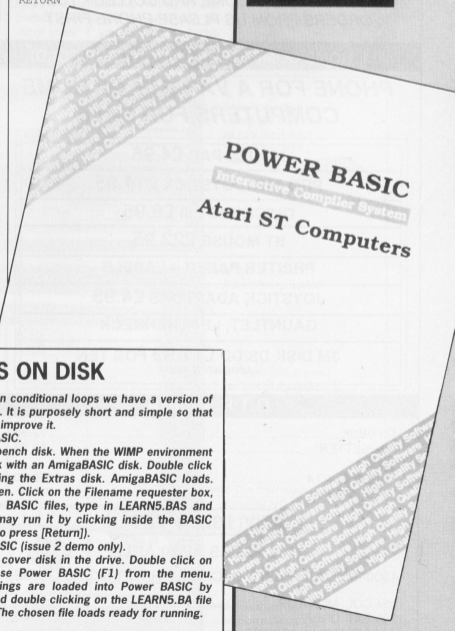
Amiga BASIC first. Reset the computer and insert your Workbench disk into a drive. When the Workbench appears replace the disk with the Amiga Extras/Amiga BASIC disk. An Extras disk will appear. Double click on this icon and wait for the contents of the disk to appear. Double click on the AmigaBASIC icon when you spot it. Amiga BASIC is now ready to use.

Insert either issue 2's cover disk or Hisoft's Power BASIC disk and press the reset key. If you're using the cover disk, double click on the CLICK_ME.PRG icon when it appears and then select the appropriate item from the menu. For the full version double click on the PBASIC.PRG file icon (or HBASIC.PRG if using the &79.95 package). You're ready to roll.

Now read the reset of the article to find out how you can create BASIC programs.

MORE CONDITIONS

Power BASIC offers extra conditional structures for the programmer: DO..LOOP, REPEAT..END REPEAT, EXIT DO, EXIT IF, EXIT LOOP, EXIT FOR. DO LOOP structures repeat the statements within the loop until the conditions are true (if WHILE is used) or false (if UNTIL is used). REPEAT executes a series of commands over and over again until an EXIT statement is encountered. EXIT instructions allow safe exiting of loop structures.



LISTINGS ON DISK

To complement this month's article on conditional loops we have a version of the classic Bomber game on the disk. It is purposely short and simple so that you can follow the logic behind it and improve it.

Loading listings into AmigaBASIC.

Reset your Amiga and insert a Workbench disk. When the WIMP environment appears, replace the Workbench disk with an AmigaBASIC disk. Double click on the AmigaBASIC icon after opening the Extras disk. AmigaBASIC loads. Goto the Project menu and select Open. Click on the Filename requester box, insert the cover disk containing the BASIC files, type in LEARN5.BAS and press [Return]. The file loads. You may run it by clicking inside the BASIC window and typing RUN (don't forget to press [Return]).

Loading listings into PowerBASIC (issue 2 demo only).

Reset your ST and place the issue 2 cover disk in the drive. Double click on CLICK_ME.PRG icon and then choose Power BASIC (F1) from the menu. Power BASIC loads. The BASIC listings are loaded into Power BASIC by selecting Load from the File menu and double clicking on the LEARN5.BA file that appears in the file selector box. The chosen file loads ready for running.

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REVIEW

AiRT 2

Does programming scare you? Jason Holborn plucks up his courage and investigates a new system that promises to take the pain out of it all.

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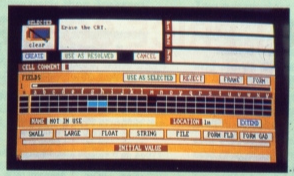
The main claim to fame of machines such as the ST and Amiga are their ultra friendly user interfaces. All those windows, icons and pull-down menus add up to two immediately useable computers. But if you've ever tried programming the Amiga then you'll know that the situation suddenly becomes very different. Not a single icon in sight and even the mouse, the workhorse of a WIMP based system, is left skulking in a corner of the desk. Beneath those user-friendly WIMP systems, nothing seems to have altered where programming is concerned.

AiRT hopes to change all this. Using AiRT requires no typing of incomprehensible commands and meaningless functions. No longer do you have to worry about the positioning of braces and semicolons, just point click, and that's it.

AiRT is a programming language that uses icons to represent its commands. Each command has its own specific icon and you program by bringing several of them together on a grid. In this sense, programming under AiRT is very similar to conventional programming, apart from the fact that your program exists more in the form of a flow chart than an ASCII text file.

The range of icon commands is extensive and includes most of the commands you'd expect to find in a good programming language. There are commands to control the logical flow of a program, including jumps, loops and subroutines. Although these control commands are adequate for most uses, if you're used to highly structured languages such as Modula 2 or C, then the omission of case

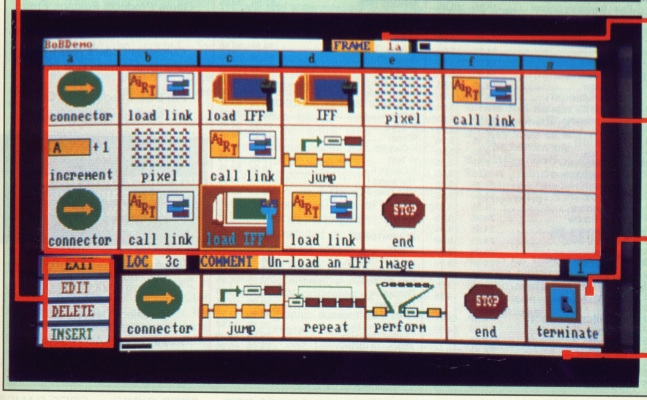
HOW TO BE AN AIRTIST



◀ *The 'Forms Editor' alows you to set up the screen as you want it for your program's output.*

▼ *AiRT's program editor gets to grips with a program, lining the icons up in the correct order.*

■ *Control of AiRT's editing functions*



■ *The current frame being edited*

■ *This is just a small section of a single 'frame'. Each icon sits in its own cell.*

■ *The icon menu – scrolling left and right along this menu gives you full access to all AiRT commands.*

■ *Scroll bar for scrolling though the icon menu.*

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WHAT'S NEW IN VERSION 2?

Version 2 of AiRT features several enhancements over its predecessor, as well as the expected bugfixes. Support for IFF picture files has been extended so that they can be preloaded for use later in a program, thereby cutting down on the amount of disk access. Another useful addition is a random number generator which enhances simple games. But the majority of features in version 2 are related to AiRT's Forms facility which makes the handling of forms very much easier. One vital addition the advanced user will appreciate is the ability to add fragments of conventially-programmed code (C or Assembler), to cover

structures, WHILE..WEND loops and the like may prove annoying. As well as the standard program control commands, AiRT has a comprehensive list of commands for screen rendering, file control and input/output control. Using all these different icons lets you write most programs with a minimal amount of knowledge of the Amiga.

Amiga specifics, such as speech synthesis, BOBs and sprites are all accessible from within AiRT and even picture and music files can be read (the IFF 'ILBM' and '8SVX' file formats respectively). AiRT programs can also call external programs written in other languages using a system of *linkup modules*. Using these modules gives the AiRT programmer access to some powerful facilities only available in fairly low level languages such as C and assembler.

First catch your program

To write a program under AiRT you first load the editor which is included with the package. This shows a *Frame Map* containing 75 frames, each of which is divided into 75 cells. Each cell can contain a single command icon. After you've selected a frame, the screen changes to show you a section of the frame's cell map and you 'write' your program by clicking on the icons you require and copying them to cells on the grid. A new screen is then displayed, showing all the information for that particular icon. By clicking fields on this screen you can add parameters to the command represented by the icon (a list of variables to be printed, for instance). Most icon commands require at least one parameter to be passed to them before they are entered into a program.

The AiRT editor includes many of the functions you'd expect in a text editor such as overlay (best compared with typeover mode in a text editor), and insert and delete, which mimic inserting and deleting lines in a text editor. One nice feature is that the editor automatically updates the rest of your program when you insert or delete icons, so jump commands still jump to their correct destinations.

One useful program included in the AiRT package is a *Forms Editor* much like those included with the more powerful relational database systems such as SuperBase Professional. The AiRT forms editor allows you to load IFF pictures for use as a backdrop to your screen display. Once an image is loaded, you can place all the required fields onto the form. Once the completed form is saved, it can then be recalled at a later date for use in your programs.

Once you've written your program you can compile it to an executable program. Unlike most language compilers, AiRT's is simplicity itself. Once you've clicked on the compiler icon from the Workbench, a small window opens to show the current state of compilation. If any errors are found, they're automatically written to a log file, which can be viewed at your leisure. The actual error messages are not very helpful and can in fact serve to confuse things. The final compiled program is not completely stand-alone, as it requires AiRT's runtime system, AiRTExec, to be on the same disk as the program.

Also included on the AiRT disk is a print utility for obtaining a hard copy of your program. This lets you print your program either as text, like a conventional programming language, or as a graphic dump of all the icons in your program. The printout displays all fields and parameters used by each icon and can be an invaluable asset when debugging. Compiled AiRT programs are not blindingly fast but still a good deal speedier than AmigaBASIC.

In the limit

So what kind of person would benefit from AiRT's approach to programming? The authors, PDJ Software, feel it is probably best suited to the programmer who requires a rapid solution to a programming problem, or to the inexperienced first time programmer. While a beginner would certainly benefit from AiRT's approach, it's doubtful whether the professional programmer would change the habits of a lifetime and switch to AiRT's method of working.

AiRT is probably best suited as a learning tool. Its design encourages structured programming and top down design and could be an invaluable tool in teaching the principle

IFF FORMATS

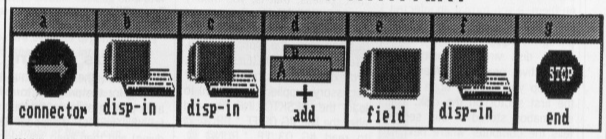
'IFF' is just the name used to describe the standard data format of Amiga picture or music files.

Several IFF 'Forms' exist, of which the most popular are as follows:

ILBM – Pictures
8SVX – Sound Samples
ANIM – Animations
SMUS – Music

IFF is an ever-developing file format that is designed to cover all file types. New IFF 'FORMS' are created as needed. (The most recent addition to the IFF file type is for multi-colour fonts.) Expect to see a lot more about these in Workbench 1..3 when it finally arrives.

PROGRAMMING WITH AIRT



Writing a program under AiRT is a simple process and is more like designing flow charts than conventional programming. If you've ever worked with flowcharts then programming with AiRT should be simple.

The listing in this panel is an extremely simple example of an AiRT program. It prompts the user for two numbers, adds them together, displays the result and waits for [Return] to be pressed before finishing. Seven variables or 'fields' as they are called in AiRT have to be defined, three of which contain the actual screen text.

Icon 1 – every program must have a start and finish and these are marked by a connector and a terminator icon. The connector icon is automatically placed onto your program grid when you select an empty frame.

Icons 2 and 3 – display a text string on the screen to prompt the user to enter a number. Two parameters must be supplied, the string to be displayed and the name of the field to hold the user's input.

Icon 4 – adds the two numbers together and stores the result in a separate field.

Icon 5 – prints the sum of the two figures on the screen, complete with a little message.

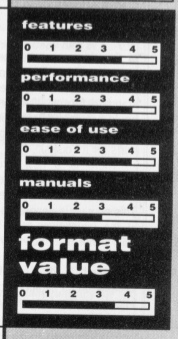
Icon 6 – pauses the program until the user presses [Return]. AiRT automatically opens and closes an output window at the start and end of a program. This icon is used to prevent the output window closing so that the final message is displayed.

for

- **Has full range of basic programming features**
- **Easy way of learning programming**
- **Editing/debugging simple**
- **Can include Amiga 'IFF' pictures/digitised sound in programs**

against

- **Can be laborious to build even simple programs**
- **Ultimately not as flexible as a conventional language**



TIPS DESKTOP

And now from our medical correspondent we have a report on recent developments in anti-viral treatments for all STs. Also invaluable tips on keeping your machines in tip-top condition. Martin Saunders carries off the £30 cash prize for his invaluable virus dodges.

Virus is the disease

A disk virus isn't a physical disease; it can't be transmitted by rubbing disks together. It doesn't destroy disks, either, just the data on them. If you format an infected disk, the virus will be destroyed (though it could still be in memory). A disk virus is basically a destructive program. When you start up your ST the drive reads the first sector on the disk. The information stored in this sector tells the computer where next to read data. A virus usually works by squeezing itself into the boot sector of a disk to ensure it is loaded into the ST, from where it can start destroying data or programs. Once a virus is in memory it links itself to the read or write function of the disk operating system. From there it writes itself to boot sectors of other disks as they are logged into the system.

To reduce the chances of infecting your disks follow these guidelines:

■ Switch the machine off and on before running any new program.
■ Keep disks write-protected if you don't save data to them regularly.
■ Check your disks for viruses with the Virus Killer supplied on our first cover disk (remember, standard format disks only – you could ruin commercial games software which often uses special formats for its disks).

There is a new virus which spreads by attaching itself to one or all files with a .PRG extension. This new virus cannot be killed off in the usual way (with the Virus killer, that is). So how do you avoid them?

Select a PRG file (by single clicking on its file icon), pick Show Info from the File menu, change the PRG extension to RUN and click on OK. Do this to all PRG files. This protects them from the virus which only looks for files with .PRG filetypes.

The problem then is running the newly named programs – you can't. Unless, that is, you modify the DESKTOP.INF file. Open a window from the Desktop and Save Desktop from the Options menu. Use a text editor (*First Word*, *Protext* or even the *Word400* accessory supplied last month) to load the DESKTOP.INF file and alter the line #G 03 FF *.PRG@ @ to read #G 03 FF *.RUN@ @. Resave DESKTOP.INF, reset the machine and you will then be able to run all files with the filetype RUN.

The only problem is having PRG files in an AUTO folder – TOS can only automatically run files with .PRG extensions You can mess with DESKTOP.INF all you like; it won't have any affect. Your only recourse is to remove everything from the AUTO folder (unfortunately this isn't always what you want).

Martin Saunders
Broadstone, Dorset

Text file dodges

When displaying a non-program file from the Desktop (by double clicking on any file that hasn't got a PRG, TOS, ACC or TTP extension and clicking on the VIEW box in the requester) the text can be incremented one line at a time by pressing [Return], a page at a time by pressing [Space], or exited with either [Control]C or Q.

J Taylor
Sunderland, Tyne and Wear

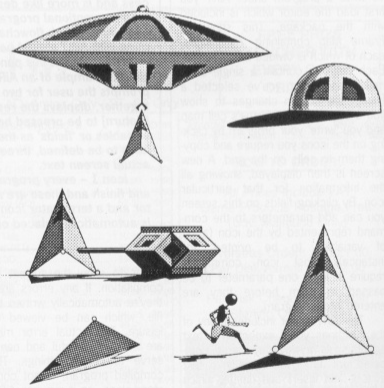
Bug off

Certain versions of *Carrier Command* have a bug which prevents you getting enough fuel to complete the game. You can check for this early version: opt for a strategy action game and, when faced with a front view of the carrier, press [Control]-[V]. The version number is displayed – 1.01 is the old and 1.04 the new. Telecomsoft will upgrade your game if you send them the old version.

Terry O'Hara
Kirkintilloch, Glasgow

Oids again

If you love the demo, but hate waiting for the program to re-load after playing a game, try this: wait for the text to disappear (after dying) and then keep any function key pressed. This re-starts the demo without it accessing the disk.



Undeleting files

Using any sector editor – such as *Tinytool* from last month's cover disk – it is possible to recover recently deleted files. The disk's root directory is usually on the second track; subdirectories (or contents of folders) could be anywhere, but are easy enough to find.

When a file is deleted the first character of its directory entry is changed to E5 (229 in decimal) – the rest is left intact. To retrieve a deleted file simply alter the E5 character to an ASCII value in the range 32 to 127.

If you have saved other programs onto the disk since erasing the file, you may well have overwritten the space it originally occupied, in which case it's highly unlikely the old file will still work properly. The sooner after deletion you try to recover the file the better your chances of success.

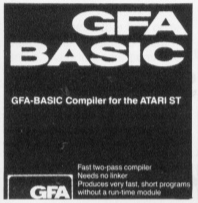
Warning: sector editors are dangerous things if used incorrectly or by the uninitiated. Writing junk values to sectors can cause irrepairable damage to disks. If

you're unsure how to use a sector editor, ignore these tips. It is best to make a backup of a disk before altering sector data.

I Wood
Coventry

GFA Compiler bug

If you write large programs using GFA's BASIC interpreter, chances are you won't have enough memory to run them (especially on a 520). No problem once the program has been compiled though, since you won't then need the interpreter in memory. The compiler usually reports errors it finds during compilation and refers you to the interpreter. However, one place where it falls down is in the



passing of parameters to procedures.

Say you write a procedure that accepts four parameters (string or numeric) and, during the main body of your program, call the procedure with only three parameters – the mistake won't be highlighted by the editor's syntax checker. When you come to compile the BASIC program the compiler will crash. Most disconcerting. The moral of the story is take care with procedures and parameter passing.

MONEY MONEY MONEY

Yes, you have the chance of getting your mits on loadsa-loot! And at what cost to you? A few lousey lines of hints on getting the best out of a software package, or a hardware modification, or how to use the Desktop more efficiently or anything you feel will interest other avid ST users.

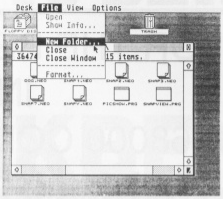
The star tipster each month gains instant fame and great wealth (well £30 actually). So come on, share your secrets with 40,000 other readers. And perhaps it'll be your lucky day. Rush your GEMs to: Desktop, ST/Amiga Format, 4 Queen Street, Bath, BA1 1EJ.

BEGINNER'S CORNER

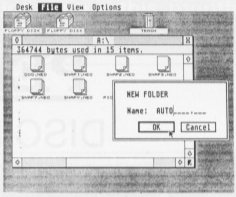
Doubtless you've seen the collection of file icons that appear when you insert a disk in the drive and double click on the drive A icon. There are only three types: the data file icon which resembles several sheets of paper with one of the corners folded over, the executable program icon which has a dotted bar along its top and the folder icon which looks like a folder.

If you've been following Beginner's Corner, you should know what happens when you double click on either a data or program icon. But just in case you don't... double clicking on any file with an extension other than TOS, PRG or TTP will cause a window to pop up asking you to Show, Print or Cancel. Show displays the contents of the file on screen, Print sends the file to printer and Cancel takes you back to the Desktop. Double clicking on a program icon runs that program.

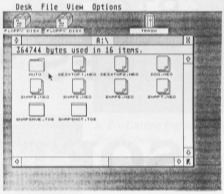
That leaves folders. Basically they are used for organising files and other folders into neat categories. Folders are neither programs nor data; simply convenient areas in which files and folders may be held. For instance, if you have a window displaying an unruly mass of files, it can become almost impossible to find any particular one!



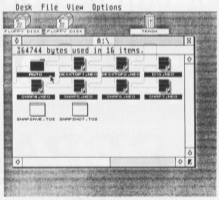
▲ ***Making folders is fun. First ensure you have a directory showing and then click on the New Folder option from the File menu.***



▲ ***Enter a name for the folder and press [Return].***



▲ ***After a few seconds of disk whirring a folder will appear in the directory.***



▲ ***Now get organised. Copy files of a particular type into the folder.***

CREATING FOLDERS

Get organised; create a folder. Make sure you have a disk in the drive with a display of the files on screen, point at the File option on the menu bar and click on New Folder. A dialog box appears asking you to give the folder a name. Click on Cancel at this point if you don't want to proceed. Otherwise type in the name (eight characters plus a further three-character extension) followed by [Return] or a click on Ok. After some disk whirring you should spot the folder in the currently active window.

You can create as many folders as you like, but don't go crazy as they gobble up disk memory fast. You can even create folders within folders, up to eight levels of them.

FILES INTO FOLDERS

First open the folder by double-clicking on its icon. The current directory is replaced by the folder's directory, which at this stage should be empty. Open another window by double-clicking on the current drive's icon and check that the files you want to move into the folder are visible in this second window. Now, select the files you wish to copy into the folder by holding down [Shift] and single clicking on their icons. Drag the highlighted files into the folder window. The files are automatically copied. You can then delete the files from the original directory by selecting them and dragging them to the trash can.

RENAMING FOLDERS

You can't. Well, you can, but it's a very drawn-out process. First create a folder with the new name, then copy all the files from the old folder into the new one and finally erase the old folder with its entire contents. Sounds easy, but if the old folder takes up a lot of disk space it may be necessary to copy one file at a time, erasing the old copy each time to keep enough room on the disk.

AUTO FOLDERS

It's possible to create a special folder, appropriately named AUTO, that at startup automatically runs any file with a PRG filetype stored inside it. Any number of PRG files can reside in the AUTO folder – they are executed in the exact order in which they are saved into the folder.

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TIPS WORKBENCH

Expand your Amiga's consciousness with this mind-blowing collection of top tips. Creating and editing icons is the major theme this month, for which a £30 prize goes to Norman Little of Preston.

Creating double icons

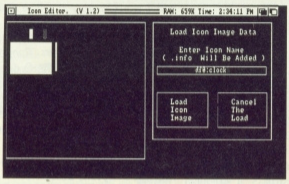
Normally, when you click once on an icon it goes into a kind of 'negative' colour scheme to show it is active. Many icons for commercial products, though, have a 'dual image' – when you click on them, a whole new image appears. This is often used to create a pseudo-animation effect. For example, on this month's cover disk there are drawer icons: click once, and the drawer opens.

You can create your own dual icons, with the aid of a utility on the standard Amiga 'Extras' disk called *IconMerge*. First, you need to create the two separate icon images. For this you need the icon editor, IconEd. As an example, let's create a new icon for the Workbench clock tool, on which the clock hands move round when you click it.

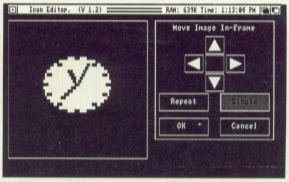
Run the icon editor – this is covered fairly well in the Amiga manual, on pages 5-31 onwards – make sure you are only working with *copies* of any master disks. From the Workbench, open the System drawer of your Startup disk and double-click on the IconEd icon. Once it has loaded, an information box about 'tool types' appears – click on 'OK'.

You can now load an icon to change, and edit it as though you were in a paint package. Load the Clock icon: from the 'Disk' menu choose Load data, click in the name bar on the box that appears, type `DF0:CLOCK` and click on Load. Now you can mutilate the image to your heart's content.

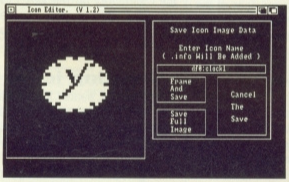
When you come to save the changed version, choose Save Data from the Disk menu. You now have two choices: Frame and Save or Save Full Image. You will have noticed that the icon doesn't usually take up all of the box that it's edited in. If you click on Save Full Image then the whole editing area is saved. It's often more use-



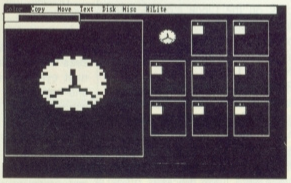
▲ *1 – The Icon Editor is in the System drawer of your Workbench disk. Load up the supplied Clock icon to edit it*



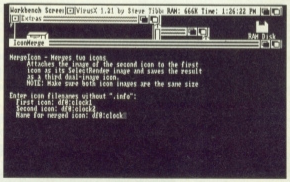
▲ *2 – Centre the icon in the frame with IconEd's 'Move' menu*



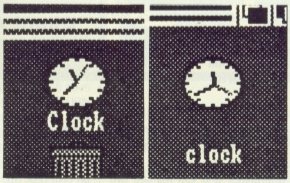
▲ *3 – Save the centred image as CLOCK1, with 'Save Full Image'.*



▲ *4 – Now you can edit the icon to move the hands round, then resave it as CLOCK2*



▲*5 – After quitting IconEd, you'll find IconMerge in the 'Tools' drawer of the extras disk. Follow the prompts to create a new CLOCK icon combining*



▲ *6 – Before and after... back at the Workbench, your Clock icon is now animated.*

ful to save just the icon: click on Frame and Save and imagine a rectangle framing the icon image. Click at the top left and bottom right of the area to be saved.

The only complication if you're going to use IconMerge is that the two icons to be merged must be exactly the same size, or you get a bad effect. For this reason it is best to save icons with 'Save Full Image', since it is almost impossible to 'Frame and Save' two equal areas by hand.

So, after loading the CLOCK icon, save it (the full image) unchanged as CLOCK1. Edit it to move the hands round, and save that image as CLOCK2. Quit the Icon Editor program.

Put your Extras disk in the drive, and from the Tools drawer run IconMerge. Put the disk on which you saved the CLOCK1 and CLOCK2 icons back in the drive. Follow the prompts, typing in DF0:CLOCK1 as the name of the first image and DF0:CLOCK2 for the second. Then type DF0:CLOCK as the final icon name. *WARNING!!! This overwrites the old Clock icon.*

After the program has finished, your handiwork is visible. First, close and reopen the window containing the Clock icon (this makes the Amiga re-read the disk to register the new icons). You'll find the icons for CLOCK, CLOCK1 and CLOCK2 are all on top of each other – drag CLOCK1 and CLOCK2 to the Trashcan so you can see CLOCK properly, then click on the Clock icon to make the hands move, and click on a blank part of the screen to deselect the icon and reset the hands.

Norman Little
Preston, Lancs

BASIC typos

Amiga BASIC will proofread your lines for you as you type them in, to trap your typing mistakes. Make sure [Caps Lock] is off so you are typing in lower case. After you press [Return] at the end of each line, Amiga BASIC converts all keywords such as TO, FOR, NEXT into upper case, leaving variable names in lower case. Look at each line and check that the words you expected have been capitalised.

Andrew Rispoli
Barnet, Herts

More hidden messages

Those hidden Amiga ROM messages keep cropping up. Load 'Preferences' and you will see two graphical representations of your trusty mouse. Treating the buttons on these mice as 1, 2, 3 and 4 (from left to right), click on:

1, 2, 3, 4, 1, 2, 3, 4, 1, 2, 3, 4, 1, 2, 3, 4

Now select 'Change Printer' and click on the up-arrow of the printer selection menu until you run off the top. This reveals a cute romantic message!

Alec Tucker
Leicester

BASIC space

One tip for BASIC programmers who are frustrated at being limited to 25K – use the CLEAR command. For example, `CLEAR ,75000` gives you 75K of program space to play with.

Alec Tucker
Leicester

3D Digitising

It is possible to produce 3D pictures with the DigiView digitising kit – as reviewed this month. It uses the red/blue spectacles method beloved of old 3D films, so you'll have to buy some red and blue cellophane and make up your own pair to see the result (or use the DigiView colour wheel).

DigiView constructs a colour picture by taking three different scans of a scene – red, green and blue – and combining them into a colour composite. To get a 3D scene, first take a red scan of the scene, then carefully move the camera a few inches to the right (about the distance between your eyes) and take a blue scan. Don't bother with the green.

Display the colour picture in 4096+ mode, and turn the green slider to a minimum. Hold the digitising colour wheel in front of your eyes with the blue filter over your right eye and red over your left, and hey presto – 3D! Of course, you only get 3D if you were digitising a true 3D scene originally, not a flat photograph.

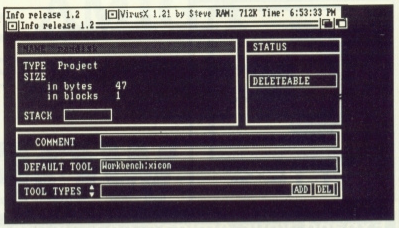
You may get better effects with some images if you use red and green as your two colours, not red and blue. It depends on your camera and the colours in the scene. Experiment.

Aaron Garbut
Thornhill, Stirling

Silent running

The VirusX program on issue 1's disk is great. If you put it in your Startup-sequence it works, but even if you use the command RUN VIRUSX is leaves a CLI window open, which is annoying.

What you need is a PD program called RUNBACK, which runs a program without its window. It's on Fish disk 65. Copy it into the C directory of your boot disk, then with VIRUSX in the root directory include in your startup sequence



■ *'Project' icons have the name of the Tool (ie. program) they call up written into the Info. To convert a file from a Notepad note into an XICON executable file, change the Default Tool line to read "XICON".*

the line

```
RUNBACK VIRUSX
```

and it won't leave you with a dead CLI window hanging around.

If you have a copy of Mastertronic's *Space Ranger*, you're in luck. Look in the C directory of that disk and you'll see RUNBACK there for you, saving you the (additional) cost of a Fish disk! It may well come with other programs too, so look out for it.

K. Micklewright
Market Drayton, Salop

■ *Workbench editor adds: A version of RUNBACK called RUNBACKGROUND can be found in the C directory of 'The Very First' disk, the tutorial disk supplied with recent A500 sales. So you need't even have Space Ranger!*

Creating icons

Have you ever wanted to make an icon for a program, created an image and named it accordingly, but had the Amiga do nothing but flash rudely at you?

Creating icons for programs from scratch can be tricky, but there is a PD program called XICON to do just that. You'll find it on Fish disk 102, or alternatively in the VIRUSX directory of issue 1's cover disk or the VILBM directory of issue 2's. Here's how to run a set of CLI commands from a Workbench icon:

1) Copy XICON from the relevant place on the Format cover disk to the root directory of your boot disk.

2) Using the ordinary Amiga Notepad utility, create a file containing the CLI lines you want to execute. For example,

```
ECHO "Setting up RAM
   disk..."
COPY C/#? TO RAM:
```

3) Save the Notepad file.

4) Edit the icon information: click *once* on the Note you have just created to highlight it, then from the Workbench menu choose the Info option. This displays a screen showing the icon's details, one of which is a line saying "DEFAULT TOOL Workbench:Utilities/Notepad". Click on this line and edit 'Utilities/Notepad' to read 'Xicon'.

5) Delete all the Tool types lines at the bottom of the screen by clicking on the DEL box at the bottom right until they are all gone.

6) Exit by clicking on Save. If you want, you can use the Icon Editor IconEd to edit the icon's appearance, to change it from the Notepad standard.

6) Now double-click on the icon and a CLI window opens and the command file runs. Click on the Close-gadget to return to the Workbench afterwards.

7) You can also use XICON to display text files. Create your text file with the Notepad, amend the icon info as before, but also edit the Tool Types line of the Info screen (click on ADD) to say `MODE=text` – the upper and lower case is important. Now when you double-click on the icon the file is displayed a page at a time, pausing for you to click the mouse on the bottom of the window to continue, or type [Ctrl]C to exit.

Fauzan Mirza
London SW16

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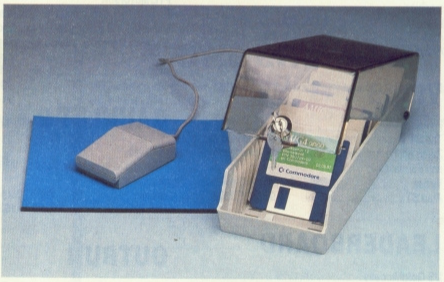
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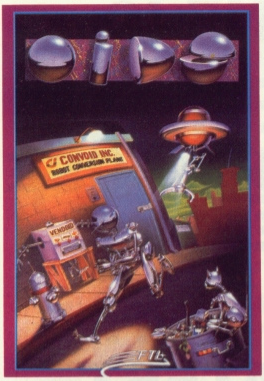
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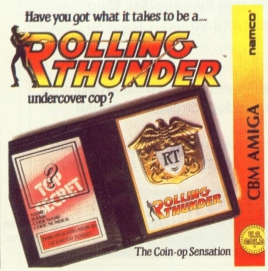
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GOLD DUST

Steve Gold taps the bulletin board wires under the Atlantic and finds American ST users not at all happy with Atari, and plans of an Abaq-basher from Commodore.

Atari is now under fire from its end-users in the US, following last month's decision to phase out distributors in favour of company-appointed 'direct sales representatives'.

The effect of the changes has meant that many dealers are now shying away from handling the ST, since they have no-one to turn to (other than Atari!) when it comes to technical enquiries from customers.

Even if you're a technically-aware user of the ST in the US, you can still hit problems with the current ST developers' kit (price $300). For your money you get 1,000 photocopied pages on the 520ST, most of which is available from other sources.

In addition to this, Atari is bundling an old copy of *C Programming* by Mark Williams, and five disks of programming utilities. Most of the utilities' features are now available from other public domain/shareware software sources. As Frank Mariano, managing editor of *ST Report* in the US, said: "All this for a mere $300." Quite.



■ ***Atari's UK MD Bob Gleadow – doing a better job than his US counterparts.***

UK users should consider themselves lucky that they have the likes of Bob Gleadow's (Atari UK's managing director) team to deal with. Gleadow is ort old hand in the industry, with considerable experience. If the trends in the US are anything to go by, Atari UK and Europe is moving away from Atari US's management. Maybe that isn't such a bad thing...

Press for action

ST Report, incidentally, is a weekly online newsletter for the Atari community which is available free of charge to subscribers of the *Compuserve* and *Genie* online systems in the US. Compuserve costs a few dollars to join and use, but – until the end of the year – Genie is offering a free subscription to its service.

To access Genie from the UK, you'll need a BT Packet Switch Stream account using an NUA (network user address) of A93136900.

Once connected to Genie (at the +COM prompt) key in `XJM11877,GEnie` and you will be asked for some personal details, and a valid credit card number.

Genie is cheap to use (apart from IPSS costs of a data call to the US) and has an online area for ST users called the 'Atari ST Round Table'.

The Round Table has three main areas: a bulletin board, software library and the real time conference area. For UK users, the software library is the most interesting, since it contains the latest public domain and shareware packages available in the US – usually some weeks, if not months, ahead of when they find their way onto the UK scene.

Out of the dungeon

On a more upbeat front, the signs are (at the time of writing) that Atari is now using Sony drives in the 520STFM. This should increase the reliability and longevity of the drives on the ST. Good news.

Meanwhile, if adventures are your scene, *The Dungeon Master* (by FTL) now has a solution book available. *The Dungeon Master Guide* is produced by Computer Avenue at $6-95 (about £4-00) and is receiving rave reviews in the US.

If you're into the Dungeon Master, then send a cheque or money order for $8.95 (including international postage) to: Computer Avenue, 90 South Wadsworth, Suite 105-502, Lakewood, CO 80226, United States. If you can get your order in promptly, then you'll get a free parchment paper spell list as well.

On the ST hardware front, plans are now firming up for the new version of TOS. By the time you read this, the ROM chip set should be available from Atari US at around the $100 mark. Expect the package from Atari UK before the end of the year.

Finally this month, there's a spot of good news on the horizon for those ST users who've been thinking of upgrading to a 68020 or even 68030-based ST when they arrive. In an online interview during August, Julian Oklamcak, a senior officer with Atari Canada, revealed that Atari is considering offering a 68020-based slot-in upgrade for 68000-based ST users. More details as I have them.

Parallel Amigas

Over at Commodore meanwhile, and the word is that Commodore is readying a Transputer-based system for 1989 release. Details are still sketchy, but the machine is expected to bear a strong similarity to the Atari Abaq.

How close to the Abaq? Close enough to use the same operating system, that's how close. Inside word is that Commodore is expecting to use Helios on its Transputer system. The idea is that Helios will become for Transputers what MS-DOS is for the PC, except light years better (of course).

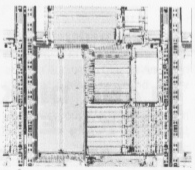
Not that Helios will be the only language available on the Commodore Transputer. Commodore R&D staff are reportedly busy working on porting a Unix kernel over to their machine.

If you've got a plain vanilla Amiga, however, and want to create some database applications on your machine, then stand by for a revolutionary product called Microfiche Filer from Software Visions of 26 Forest Road, Framingham, MA 01701 (Tel: 0101-617-875-1238).

Microfiche Filer will cost less than $99 (possibly as low as $60) by the time it appears at the end of this year, and is reported to be the best database package around for the Amiga. The package is almost entirely Icon-driven, and is thus very easy to use.

First reports in from the US on various Alpha test versions that are doing the rounds have won over the reviewers 100 per cent. This package could be well worth waiting for.

And finally, there's still no news on the expanded baby Amiga. Most industry watchers had expected to see a 1MB version of the A500 (the B1000?) available by now. Sources have it that DRAM chip prices are hitting Commodore as bad as at Atari. A shame, but keep an eye out for reports from Comdex (Las Vegas – 14/18 November). You could see some activity from Commodore at last – further details in next month's issue!



■ ***The transputer chip – at the heart of Commodore's rival to the Abaq***

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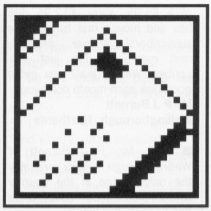
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FORMAT LETTERS

In which the Format team pit their wits against bulging mailsacks of questions, comments, brickbats and bouquets. Why not add your voice to the cohorts of *Format Letters, ST Amiga Format, 4 Queen Street, Bath BA1 1EJ.*

In the FPICture

I am an Amiga 500 owner. Could you print the answers to my queries, as I'm about to snap!

I'm stuck on the FPIC program from disk 3. I've put its icon in the RAM disk, transferred it on to a formatted disk, reset, loaded Workbench again, run FPIC again successfully... Ok so far, now to the point, I can't load a picture into FPIC.

I've loaded Deluxe Paint, so now I've got DP and FPIC, and it should be as easy as selecting 'load' on FPIC, swap to DP and hey presto! But no, Amiga wants FPIC in its drive again, tries to load a pic but of course, only FPIC is on this disk. I've tried putting pics on the FPIC disk but I don't know how to put a lo-res drawer on a disk, I've even tried transferring the LORES drawer, but the it is too big for the RAM disk. Please forgive the intricate description, I'm going insane. I knew I should have bought a Spectrum.

Now for a couple of other queries: How do you get into HAM mode, interlace etc, without using a paint package? How was the 'Spaceship' pic created? I loaded it into Deluxe Paint only to see that it was made up of millions of randomly coloured dots.

P Tomkin
Harrow, Middx

■ *You're experiencing a common problem we doctors call "the Amiga's filing system". Here's the best way to make FPIC load a picture from a disk other than its own program disk, assuming you only have one drive: (i) Let's assume you've saved your low resolution picture in a drawer called LORES, it doesn't matter what disk you use. (ii) Run FPIC (don't have DPAINT running at the same time or you may run out of memory) and go to the Load menu. (iii) Put the disk with the picture into the drive, then in the 'Drawer' line of the Load box type* `DF0:` *and press [Return]. You will get a directory of the new disk. (iv) Now you can click on the LORES drawer and select your file off the menu as normal.*

Now to the rest. (1) The Amiga configures its screen to be correct for any picture you display; so you shouldn't normally worry about modes. The Preferences tool has an Interlace mode switch. If you're programming in AmigaBASIC you can open a window in any resolution (except HAM mode) with the `SCREEN` *command – see the manual. (2) The Spaceship picture is a public domain HAM mode picture which was digitised using DigiView. Deluxe Paint can't edit HAM mode pictures – you might try Photon Paint instead.*

A funny game

Thanks for the magazine, at last someone understands that both machines are brilliant. Can you print an idiot's guide to wordprocessing terms, as I have always thought that a header was in a game of footers.

Can you use a Commodore 1084 monitor with an STFM, and if so will it display all three graphic modes of the Atari?

Tom Steed
LAD REME, BFPO

■ *You will no doubt be astounded to know that your letter was edited and replied to using an ST1040 running through a Commodore 1084 monitor, so it certainly is possible. You've got to buy a special lead though – the Amiga's monitor uses a 'EuroScart' plug. Any good computer shop should be able to supply one. The monitor acts as a normal ST low/medium res colour monitor, so you can't display mono mode screens. Get hold of issue 1 from our Back Numbers department (see the Special Offers pages) for a WP glossary.*

Blank horror

I am writing this letter to firstly complain about the third issue of the disk. I have just returned it to the returns department. I found the disk totally unreadable as I don't think there was anything at all written on it. I hope no more issues turn out the same or else I may cancel my current subscription with you.

I must also say that the disk I am returning is not the one you sent me but one of which I bought in a shop. I purchased this because the copy you sent me was damaged by the postman as he bent the envelope to get it through our letter box. It was clearly written on the envelope 'Please Do Not Bend', but he still bent it. I ask myself are postmen illiterate? I therefore went to the Post Office and put in a compensation form to the value of the magazine and disk.

So far I have spent over £7 and I still do not yet have a working copy of the disk, just two magazines exactly the same. I hope no other readers have had the same difficulty as I have had. I also do not know when I will get my money back or if I will get it back at all. I also do not know when I will get the disk back from your returns department.

Also I must say that the disks are not 100% 'Loading Guaranteed' as sometimes I have to take the disk out of the drive and re-insert it into my Amiga a number of times before I can access the programs from the Workbench. This I solved quite easily by copying the disks; I have managed to put the first two issues of the disk on to one disk with a couple of K to spare. (Yes I know I am a smart ass.)

To avoid the problem of unreliability why don't you put ST programs on the disk one month and Amiga programs on the next month? There is also another solution: why don't you put two disks on the front or split the magazine into two different magazines?

I must not complain too much or else you might not publish this letter. I do enjoy your magazines and I mostly enjoy the games reviews the hardware developments and most of all the programming tips section.

Simon Brown
Southampton

■ *Judging by the feedback we're getting, there seem to be more problems on the Amiga than the ST, as far as reading our special format disks goes. Using DISKDOCTOR as described in issue 1 can often help. Our duplicators, DisCopy labs, tell us they try to handle replacements by return of post, but particularly with the current postal strikes going on, please be patient – it's worth the wait!*

RAMming speed

I bought your magazine (issue 1) as I am hoping to buy an Amiga in the near future and found it very interesting.

I read your Workbench section and have a question. You suggest copying a number of CLI commands to RAM: to make life easier for single disk users, and in your example put a PATH RAM: ADD command at the end. I may be missing something since I don't know how the machine works, but wouldn't it speed things up to copy COPY to RAM: first, then put the PATH command, then carry out the other copy command?

Surely this would mean less disk access since the COPY command would then be picked up from RAM: for subsequent use in the startup sequence?

J Flynn
Aveley, Essex

■ *You're absolutely right. It would be even faster though to use the multiple copy facility and do all copying from one command line. Just put a 'I' between files:*

```
COPY   COPY|DIR|TYPE|CD...
   TO RAM:.
```

Those viruses

I own a 520STFM and am about to purchase am A500 to join it. In issue 2 I was reading 'Gold Dust' and I was shocked to find out there are viruses going about on the ST. I know nothing about any of these on either machine. I only use computers for games, nothing else. Do the viruses affect games disks? Will the viruses wreck the future of the 16-bit computer? How do you cure the virus? Will the viruses ever disappear for good?

Please, please, please could you answer my questions and send me further information about the viruses, then I might get some sleep at nights. As I said I only use computers for games so please don't confuse me with computer jargon and words I've never heard of. I would be grateful for any information.

A McGilliuray
Northfield, Aberdeen

■ *Well, viruses are a pretty big topic. In brief, viruses are programs that hide on disks, spread themselves to other disks, and eventually erase data on those disks. They load themselves from disk, hang around in memory, and corrupt other disks put in the drive. The best way to be safe is by turning your machine off – not just pressing the reset button – as often as is practical (ideally between every disk change!). This removes any viruses from memory.*

Viruses don't really threaten the future of computing. There are several good virus 'killers' around which remove them from 'infected' disks. We supplied Amiga and ST killers on issue 1's disk. In this month's 'Desktop' pages we cover precautions on the ST in more detail.

Demo copying

Would you please give me advice on making a back-up copy of ST Amiga Format cover disk no. 2. I have managed to move everything except the StarRay demo. The other files I transferred by dragging them onto a copy of Amiga Workbench. I have not been able to use the CLI to transfer StarRay despite making numerous attempts.

Would you please send me detailed instructions on how to solve this problem or if this is not possible perhaps you would print an explanation in a future edition of the magazine.

Did Sue Taylor test 'IntelliType' using an American keyboard Amiga? Electronic Arts are rewriting the program at present so that it will work properly with the GB keyboard. The problem is that quotation marks are in a different place on the two keyboards. Some other keys appear in other places as well. EA tell me that the keymaps are there but the program ignores them and reads the keyboard directly.

Steve Flowers
Sprowston, Norwich

■ *To copy StarRay, (1) Start your Amiga up and copy the command files you will need to the RAM disk; open up a CLI window and type*

```
CD C
COPY COPY|INSTALL RAM:
PATH RAM: ADD
```

(2) Format a blank disk in the ordinary way. Leave it in the drive and make it 'bootable' with the INSTALL command:

```
INSTALL DF0:
```

(3) Put the ST Amiga Format disk in the drive and type

```
COPY DF0:STARRAY_DEMO
   RAM:
COPY DF0:S RAM:S ALL
```

(4) Put the newly formatted disk in the drive and type

```
COPY RAM:STARRAY_DEMO
   DF0:
COPY RAM:S DF0:S ALL
```

Now when you reboot with the new disk the StarRay demo will start.

Thanks for the info about IntelliType.

Dot dash it all

A plea – does anyone know of a morse code tutor program (dots and dashes) that run on the ST? And if so where can I get hold of it?

Is the Centronics GLP printer capable of printing the Atari complete character set, and if so how?

I would like to get in touch with other ST users and would welcome users writing to me in order to exchange tips on the ST, and possibly set up a programming team.

Thanks for a great magazine and keep up the good work.

Ron Steiner
London N16

■ *We don't know of a morse program, but maybe some keen ST-owning radio ham out there has one? We might even consider one for our cover disk if you'd send it in.*

The GLP can't print all the ST characters as they appear on screen. (It can do screen-dump graphics though). It only prints the IBM set, but that's more than enough for word processing.

Life...

A question. Which till is going to run out of till roll? Answer, the one I'm standing at. When is the Chancellor going to reduce the tax on petrol? Answer, when I fill up with petrol the day before budget day. Which computer magazine increased its offer to induce people to subscribe? Answer, the one I recently renewed my subscription with. How long before ST Amiga Format increase their offer of a £5.95, sorry, £12.95 disk box and mouse mat to would-be subscribers? Answer, probably next month as I've just subscribed. Well at least you get a good disk each month don't you?

Mr P J Burnett
Wellingborough, Northants

■ *Well, Mr. P J Burnett of Wellingborough, you're probably the only person in the country who is pleased our cover price has gone up this month!*

Questions, questions

Your mag is really great, it puts the rest to shame. The reviews are the best I've seen in any mag yet, congratulations! Its strength is simplicity. The stuff you give away on the disks is great too. Keep up the good work. The only criticism I have is that you should try and lengthen the letters page.

I have the following points/questions to make:

1. 'Superheroes, Inc' is brill.
2. Do you know when 'Captain

MONITOR MATTERS

I would be very grateful if you could pass on information to Mr N Bamford of Burslem (as in issue 2 letters page) telling him that it is in fact possible to connect the Amiga to a Ferguson TV (RGB) including sound. The lead is available from Trilogic and costs £10. It gives a good quality picture (as expected) plus good sound (mono obviously). I hope it helps him.

Jonathan Morris
Cheshunt, Herts

Attention all you frustrated ST owners with Ferguson Monitors/ TVs in the MC range. I have an MCO1 with Atari STM and I have never been able to get a decent picture.

My dealer gave me a lead, when I purchased my ST, but warned me that the picture would be very bright, sure enough it was. As you know (perhaps) when the MCO1 detects the RGB signal the colour and contrast controls are disabled, and will not affect the picture. The brightness control works, but the result was still too bright.

I then purchased a lead made up from a mail order firm. The result was exactly as before and £13.95 wasted.

After several months of eye-strain while using First Word etc I decided to try and sort it out myself. I searched through all my old mags and found several solutions, most involving resistors in the R, G and B lines. and one with a diode in the vertical sync line.

I tried all these with no success. I dismantled my shop-bought lead and found three resistors in parallel with the RGB lines – no use at all as electricity takes the path of least resistance and would ignore them. So I put them in series. Slightly better. How about more resistance?

Eventually, I ended up with 1500 Ohm resistance in the R, G and B lines and one in the vertical sync. Rather than solder the resistors in the plug, I made a small "dongle" with a plastic-adaptor box, and 7 pin din plug and a 7 pin din socket, some Veroboard and about 12" of screened cable.

I now have a working monitor after 8 months of eyestrain. I hope this helps people out. Total cost of the parts required works out at about £3.00, all available from any electronics store.

If anybody wants me to make one up for them, I'd be happy to do it for £5.00 including postage.

Clive Parker
14 Cross Lanes, Pill, Bristol BS20 0JQ

Blood' on the Amiga will be released?
3. Do you know why companies charge so much for games?
4. Do you know why people like SAF (letters issue 2) are never satisfied?
5. Do you know when the WP 'Kind Words' will be released/
6. Do you know when Workbench 1.3 hits the UK?
7. Why does there seem to be a shortage of TV Modulators in the UK at present?
8. Do you know why I asked question 8?

N Owen
Havant, Hants

■ *(1) You're so right. (2) Infogrames say it will be at the PC show, September 14th. Then again, it's been 'two weeks away' for two months already. (3) Supply and demand – people are buying them at the current price, so why charge less? (4) For the same reason you'd like cheaper games. Wouldn't it be nice if everything was free? (5) It already has been. (6) Asking when Commodore intend to do anything is like asking when the Second Coming will be. It's 'imminent', they say. (7) They're all imported from Germany, so presumably there has been a cock-up on the ordering front. (8) No.*

Serious matters

In reply to G Hindshaw's letter in issue 2: why does he think that only businessmen want to know more about 'serious' software. My nine year old son uses a word processor to keep a record of his tapes and cartridges and I don't consider him a businessman.

I use my Amiga for both business and pleasure. I use a spreadsheet, database and a word processor (maybe not perfectly, but I'm getting there). There is nothing better than playing games when all the 'serious' stuff is done and the Amiga is perfect for doing both.

I'm glad you told told us that you were not going to be just another 16 bit games magazine.

Richard West
Torry, Aberdeen

Quantum Paint

I have read with interest the first two issues of your magazine. One point that I would like to make is regarding our software product 'Quantum Paint'. Quantum Paint operates correctly on all ST models (as far as we are aware) this includes both 512K and 1 Meg machines. All the graphics modes are available no matter which machine you have, as long as you don't have your RAM filled with desk accessories and so forth.

I know there has been some confusion over this fact with Quantum Paint, as we were fighting hard during its development to fit it in the standard 520STFM, and some rumours got out that it would only work on systems containing 1 Megabyte of RAM. Rest assured that the latest version (v1.05c) has been tested on as many configurations as possible, and though a few features such as block cut-and-paste only begin to be really useful on larger machines, say purchaser will find the package eminently usable.

David Jones
Quantum Mechanics, London N12

Sweet dreams

I am an avid Amiga fan and would like to program the Amiga 500 to a high standard with a view to publishing the programs professionally. I have read a lot about the different languages to use (ie. Assembler etc) and have opted for the 'C' programing language. The 'Lattice C Compiler' seems to be the best compiler for this language and I would greatly appreciate your advice on which 'C' programming books to buy, bearing in mind I haven't used a high level language before – together with names and phone numbers from where I could obtain the books. Congratulations on an absolutely brilliant magazine and I hope to see more of the same from the ST Amiga Format team.

Ian Weeks
Corby, Northants

■ *There are two areas that you need books to cover: the C language itself, and also how to access the Amiga's operating system to open windows and so on. For C, a good book is 'C: A Dabhand Guide' by Mark Burgess (£14.95, Dabs Press). The Amiga is a trickier proposition, and is a complex machine to master. There are four 'ROM Kernel' manuals published by Addison-Wesley at about £30 each, which are the definitive reference source. The two entitled 'The Amiga Intuition Reference Manual' and 'The ROM Kernel Reference Manual: Libraries and Devices.' You should be able to get any of these books through a normal bookshop by quoting title and publisher. Good luck!*

Secret lust

Looking back to issue 1, (which I didn't get until 4-8-88) 'cos I live in



'Naughty Nigel loves Long Legged Larry'!! I'm beginning to worry about these programmers!

NI) there is a small info square entitled 'Friend or Foe?' regarding the Amiga, talking about what you get if you hold down both Alt keys, etc, etc. Well, I have an ST (old OS), and when browsing through the OSROM I came across "Dave Stavgos loves Bea Hablig" at address FCF3C8. If certain keys are held down will this message be displayed? If so could someone let me know which?

Paul Gregg
Antrim, N Ireland

PS – Grovel, grovel – well, you said it helps.

Mono games

Why don't you do a survey of games that run on both ST monitors? Some games may even run better by sacrificing colour for the higher resolution and faster speed. There is no reason why programs should not be written for both types of screen. With a little market pressure stimulated by magazine reviews of games written for both screens more software houses might bother to do it.

At the moment we mono monitor owners have to assume, unless it is specifically stated otherwise, that no game mentioned in one of your reviews will run on our machines. When we find one that will, we have no idea (but much doubt and suspicion) about the quality of the graphics we would get. Why not have an article about games on mono screens with a few dumps? This would give us much more idea what we might be able to get out of our machines.

Can the mono screen display a grey scale or not? Is this why the screen on the Megaroids game from issue 2's disk gets dimmer and dimmer?

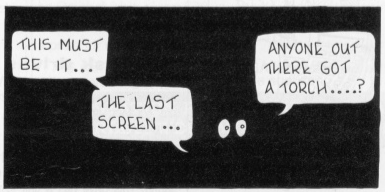
Chris Jones
Belper, Derbyshire

■ *We try to make clear whether or not games run on mono monitors. Check out Starglider II – it's great in mono! The mono screen doesn't display grey scales, but you can simulate shading by using different spacings of pixels.*

Sheep lover

Why oh why do you have to harp on again and again on the topic of armadillos? This is very very silly and almost totally irrelevant to the central theme of your magazine, which should of course be that of sheep. Have you ever considered renaming your periodical "Sheep Monthly Incorporating Yellow Pedial Rubberware"? There is in my own personal view no comparison between the nasty, evil, beady eyed look of an armadillo and the soft, warm, brown eyed gaze of a fluffy smiling sheep. (Need any writers?)

Secondly, WHY BASIC???? Let me explain myself in a rational fashion. BASIC is now a boring, outmoded, unused language for which there is no excuse. "Oh, but it's inbuilt into the machine's ROM, so we'd better not do anything naughty like loading in a new language." Wouldn't it have been possible to get a tie-up with a company to chuck a cut-down version of another language onto the disk instead of BASIC? I mean if HiSoft let you have Power BASIC then why couldn't they have done the same for their Pascal or Modula-2? None of these languages are any harder or easier to learn than any of the others (personal view), the problem occurs when one's



deeply into a specific language and then another has to be learned. As such BASIC has to be a bad, bad place to start. Anyway, 'tis done now, so how about doing a parallel series in another language, like Assembler? (Need any writers?)

Demosthenes and The Mad And Dead Wizard
Sandy, Beds

■ *Each to his own. We still love armadillos.*

As to your main point, while everyone is entitled to have a favourite language you are very wrong to dismiss BASIC as you do. It seems you haven't programmed in BASIC for five years or so – modern versions, as HiSoft's Power BASIC is – are just as 'structured' as Pascal (local variables, subroutines etc.) and since they have the option of being interpreted or compiled are a lot easier to learn on. BASICs are usually written for a specific machine, unlike C or Pascal, and so tend to have simple commands to change screen colours, generate sounds, and so on. In short, modern BASICs can be fast, powerful and flexible.

Specialist games

Through my ST I am an avid Flight Simulator II flyer and as such I have spent many a long hour 'flying' through the Flight Adventure books that are around, and now there are the new 'Scenery disks' available I am happy trying to land at Gatwick in mid-winter on a foggy night with a faulty altimeter. But after I have mastered that one, what next?

How about setting up a page or so each month dedicated to a FSII Adventure (compiled either by yourselves or from people writing in). Such an adventure might contain the co-ordinates of your departure airport, type of weather and anything to look at on the way, plus of course an interesting scenario to accompany the flight.

As the updated FSII is available on both the ST and AMIGA what better way to involve both sets of readers than through such a series of Flight Adventures.

P N H Evans
London SW14



We understand you stock some rather specialist games...?

■ *Hmmm... what an original idea.*

Cheat modes

I used your 'cheat' pokes supplied in issue 1 for 'Gauntlet' and 'Metrocross' to help my son (7 years old) to last a bit longer in the games. However, I would like to reset the games back to the original settings and wonder if it is possible to obtain pokes to do this.

David Price
Ashford, Kent

■ *With pokes that modify the game disk, there is no easy way to reset the games to their original state. You should only run the pokes on copies of the master disk, or when you are sure you are tired of the game.*

Of course, the problem is that very few games can be copied. You might find that a disk copier called ProCopy *by 'The Moving Finger Company' (0703 229041) helps. This is a disk copier that can copy some protected game disks and so allow you to keep backups of your software.*

Video quest

I own an Amiga 500 and a Commodore A1084 monitor. I was wondering if you could tell me how to connect the computer to a VHS video recorder to record animation to tape, via the Euroconnecter (SCART) port.

James Talbot
Kings Lynn, Norfolk

■ *Forget your 1084 monitor, your best route is to buy a TV modulator for the Amiga, then connect the lead into your video recorder's aerial input socket.*

ST disk drives

Replying to the questions of Mr Kendrick (issue 2) on upgrading old ½ Meg internal drives to 1 Meg ones.

When taking my ST apart I found that the disk drive inside the unit was made by Chinon of Japan. This drive has a unit fixed to the rear of it which, as far as I can tell, is some sort of drive controller (without it the ST acted as if no drive was present). The problem is that this makes the drive about 1" bigger than, say, the Cumana 3.5" when uncased. I had bought the external Cumana 1 Meg drive but after a few problems with the internal drive, and wishing for the double sided drive, I decided to do a swop.

You will need 4 screws about 0.75" long and 4 spacers about 0.5" to hold the new drive in place. The bolt holes in the Cumana drive were identical to the ST's own drive, so no alteration was needed there. I suspect that this may be true for many of these drives. The electrical connections are also identical.

The only thing that needed altering was the ST casing at the side to let the disk eject lever out. A little careful work with the Stanley knife and it looks good. I did not attempt to remove or replace the eject mechanism since the ST's own seemed to be well embedded in the drive.

Make sure that the screws fit the drive holes of the new disk drive alright before screwing them in!

I also had to remove the power supply from the Cumana case since the ST's internal drive would not fit in the case while it was there. Two new side holes had to be drilled in this case for the side screws of the ST's drive. This may have changed if they have changed the drive in the ST, so look first before going ahead.

I would not recommend removing either eject mechanism since both were entirely different and this would mean taking both disk drives completely apart.

Remember that no matter how little work you do inside the case you have completely destroyed your guarantee!

I hope at least some of the above may be of use to your other readers.

Keith Margetts
Glasgow

■ *Thanks for the benefit of your experiences. We haven't tested this method out, and can only repeat your penultimate paragraph again – remember if you try this upgrade you are invalidating your guarantee.*

Load of TOS

Hearing all the news about the new ST TOS, I was wondering what the difference/advantages are over the old one and whether it is possible to upgrade? It annoys me when magazines (not necessarily you) treat the old and out of date things as if they didn't exist. I expect that there are many more people with machines of the age of mine or older than there are with Summer Packs!

Nick Handel
Brentwood, Essex

■ *It depends what you mean by the 'new' TOS ROMs. Recent STs – Summer Pack ones and Megas – have a new set of ROMs which is essentially a bugfixed version of the old ones. Unless you are a machine code programmer you wouldn't notice the difference, and it isn't worth upgrading.*

There is supposed to be a complete new version of TOS under development which does sound good though. Among new offerings will be a disk format more compatible with IBM PCs (handy for emulations), and file copying without so many disk swaps. No price or date is yet known.

Guitar bands

Did you know that the shell of the ninebanded armadillo is used by natives to make a musical instrument resembling a small guitar? Also, the young of one litter are always identical twins.

Graham Morse
Taunton, Somerset

■ *The* Format *researchers in the Natural History museum have also uncovered the fact that the Armadillo is a descendant of the prehistoric Glyptodon, which had a body-shell three metres long.*

Speccy-lation

Could we have tutorials on writing for GEM, that sort of thing? It was like this in the early days of the Spectrum (yes, I owned a Spectrum), when magazines were prepared to educate, before they all became games only.

It's a good idea, catering for both ST and Amiga and having a disk that works on either. You may be the best way of stopping the stupid ST/Amiga arguments. Myself, I own an ST but I read the Amiga bits, simply because I'm interested.

Andrew Pearce
Hornchurch, Essex

■ *The majority of people buy their machines for games or applications, not programming, but would like to know more about how their computer works if it is presented simply. We'll be covering GEM and general programming, but we won't turn into an old-fashioned 'techie mag'.*

ADVERTISERS INDEX

16 Bit Centre	19	George Thompson Svs	19
Adamsoft	105	Glasgow Computers	50
Anco	58	Gremlin	OBC
Apolonia	72	Gultronics	78
Arran	69	Herronby	76
Athene Consultants	50	Hisoft	6
B-Bytes	50	Homesoft	72
B-Soft	98	Homeview	98
BBD Dust Covers	105	Intermediates	84
Bath Computer Shack	90	Ladbroke	16
Bestbyte	67	Logotron	IBC
Byteback	50	Mailsoft	39
Byteware	19	Manor Court Supplies	36
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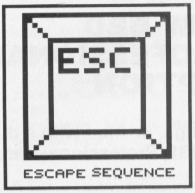
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Katakis. Bless you

US Gold's latest Autumn megagame, *Katakis*, has fallen foul of industry infighting – it seems to have been well and truly stepped on by the solicitors of Activision, sorry Mediagenic (why did they change their name?), as being too similar to their own *R-Type*. They've got together a 'look and feel' injunction which looks and feels as though it's going to stick, since Gold have capitulated and withdrawn their own program.

This kind of bickering is not unknown in the fast moving world of international reputation building known as the games software industry. US Gold themselves are currently taking action against Elite, claiming that *Overlander* infringes their *RoadBlasters* design!

It seems to have caused most trouble for magazines though: fellow publishers Newsfield will now have to withdraw the C64 cassette cover promotion of Katakis that they have already printed and mounted on the October issue of their games monthly, *Zzap 64*. Focus Publications also built a double-page review and competition around Katakis for the launch issue of their new *Computer Games Week*. Looks like the prizes, if ever delivered, could be something of a collector's item.

ST AMIGA FORMAT

Issue 5 of ST Amiga Format hits the streets on Thursday 20th October – pick one up before someone treads on it.

Cover Price

It's squirming time – you will probably have noticed the increase in Format's cover price. Unfortunately the 3.5" disk shortage has finally caught up with us, resulting in a 25% increase in the cost of blank disks and their duplication. However, even at £2.95, we hope you'll still appreciate what good value Format is. Our main competitors are around the £2 mark, but don't supply a cover disk with over 400K of program code each month. Even at PD software prices, you don't get a disk for £1.



Little Darlings

Simulator fans may have played some of the games that have squeezed out of Code Masters (though there are precious few available for the 16 bit machines). You're lucky. You only have the games to contend with.

Code Masters is the software house put together by the wizzkid Darling twins, with the help of most of the rest of their family and erstwhile Imagine supremo, Bruce Everiss. Everiss's brief, as marketing man, seems to be to produce an ugly photo of some member of the Darling entourage each month, with a 'witty' caption, and send each to long suffering hacks such as ourselves.

We leave you to judge the effectiveness of this policy for yourselves. Here are the last three month's offerings – is it too much to hope that some latterday Peter Pan will fly away with the Darlings?



For a limited period you can still get round the price increase by subscribing to Format. The rate for a full 12 issues remains at £29.95, and still entitles you to a free disk box and mouse mat. Subscribe now, it's even more worthwhile.

Superheroes, Inc.

by Sarkar



The games they said couldn't be written

QUADRALIEN





ST Screen Shot

You are entering Jupiterspace. Your destination, Astra , the vast cybernetic nuclear-fission complex they orbited mid-21st century. Something strange has happened there. Astra has sealed itself off from the outside world, the control mechanisms won't respond, the temperatures rising. Meltdown is nigh. But it's worse than that, for in the very heart of the reactor itself, the sinister QUADRALIEN forces have established their foothold in our solar-system. You have just six droids to sort it out.
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STARGOOSE!





Amiga Screen Shot

What happens when a team that's notched up two 16-BIT number ones decides to tackle the classic theme of the vertical scroll-and-blast ? The result is StarGoose!, the latest from Steve Cain and GP (Kenny) Everett, and boy is it wierd! Until you've tackled the mind-boggling variety of defence forces in the 3-D world of Nom , you're still in Straight City. StarGoose! ingredients include: The beefiest scroll-FULL screen width and Variable speed, Unique relief landscapes, Unique supply tunnels and The Eyes!

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Amiga Screen Shot

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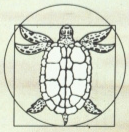
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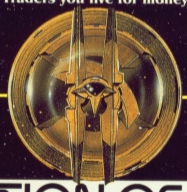
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